VOL. 161 — NO. 8

AUGUST 19, 1961

Telephony

THE JOURNAL OF THE TELEPHONE INDUSTRY

Participants in 1961 USITA Management Development program for Independent telephone executives, held at the University of Kansas, Lawrence, July 16-Aug. 11, pose with faculty members. For photo identification and story, see page 32.

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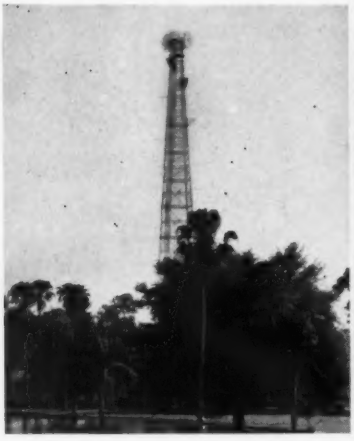
Stromberg-Carlson® systems planning meets special DDD needs at Florida Tel.....

Microwave tower soaring above the subtropical landscape marks Leesburg as principal toll center.



Stromberg-Carlson 30-position toll board. Increased traffic is efficiently handled through DDD load diversion.

View in equipment room at Leesburg shows readout bay of the XY® Toll Ticketing equipment.

unique Data Link assures efficient Toll Data processing

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"Mechanization in our toll operation," according to Max Wettstein, President, "was a most fortunate decision." The main toll center at Leesburg has, in addition to DDD readout, a Stromberg-Carlson 30-position toll board, 80% staffed on an average day. According to Burton Brown, General Traffic Manager: "Without the relief of DDD, we would have to add 10 to 15 switchboard positions."

Readout and toll board are only part of the story. To meet the special needs of Florida Tel, microwave systems utilize Stromberg-Carlson "511" Multiplex for intra-company toll and Stromberg-Carlson "561" Subscriber Carrier for otherwise inaccessible rural service. Unique Stromberg-Carlson direct readout via data links provides accurate toll ticketing billing information from distant recording offices to a centralized accounting point.

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FLASHES AND PLUGS

HERE'S A SWITCH! In Kansas, according to a UPI release, a former telephone operator, Mrs. Neil McLeod of Washington, has turned her communication talents in another direction. Instead of speaking in dulcet tones through a switchboard, she will shout auctioneer chants.

Mrs. McLeod, a grandmother, has just graduated from an auctioneer school, where she was the only woman member in a class of 176, and her husband proudly reports that "you can hear her for a full mile."

She has had lots of experience calling on the family farm, where, for 18 years, she has summoned farmer McLeod's hogs. But auctions fascinate her, and now, she practices chanting two hours each day. She says she hopes to make auctioneering chants understandable.

•

SHE "JETS" WOULDN'T RIDE WITH HIM. The Minneapolis (Minn.) *Star* relates the story of a cab driver who said speedy service boomeranged for him. An order came over his radio to pick up a fare at a certain address. It happened that he was driving past the house as the call went out.

The caller, a woman, had just hung up the telephone when he rang the doorbell.

Despite all his explanations, the lady still insisted, "Anybody who drives as fast as you must, I wouldn't ride with them," and she slammed the door in his face.

•

RIGHT GUY, WRONG LEVEL. According to a UPI report, in Van Nuys, Calif., Dale Gould, 22, told arresting officers who caught him robbing a telephone coin box he always had wanted to be a policeman, but was too short.

"I even wore elevator shoes, but they made me take them off," Gould said.

•

"TOLL"—TALITARIAN. Bell Telephone Co. of Pennsylvania unearthed an interesting fact from study of the latest Moscow telephone directory:

For the basic monthly charge, a private citizen with telephone service can call a distance of about six city blocks. Anything beyond that is a long distance call.

•

LABOR DAY. The small boy was looking at photographs of his parents' wedding in an album. His father described the ceremony and tried to explain its meaning.

"Oh!" the child exclaimed. "Is that when you got Mummy to come and work for us?"

CHANGE OF ADDRESS

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Telephony

THE JOURNAL OF THE TELEPHONE INDUSTRY

1901 — 60 years — 1961

August 19, 1961

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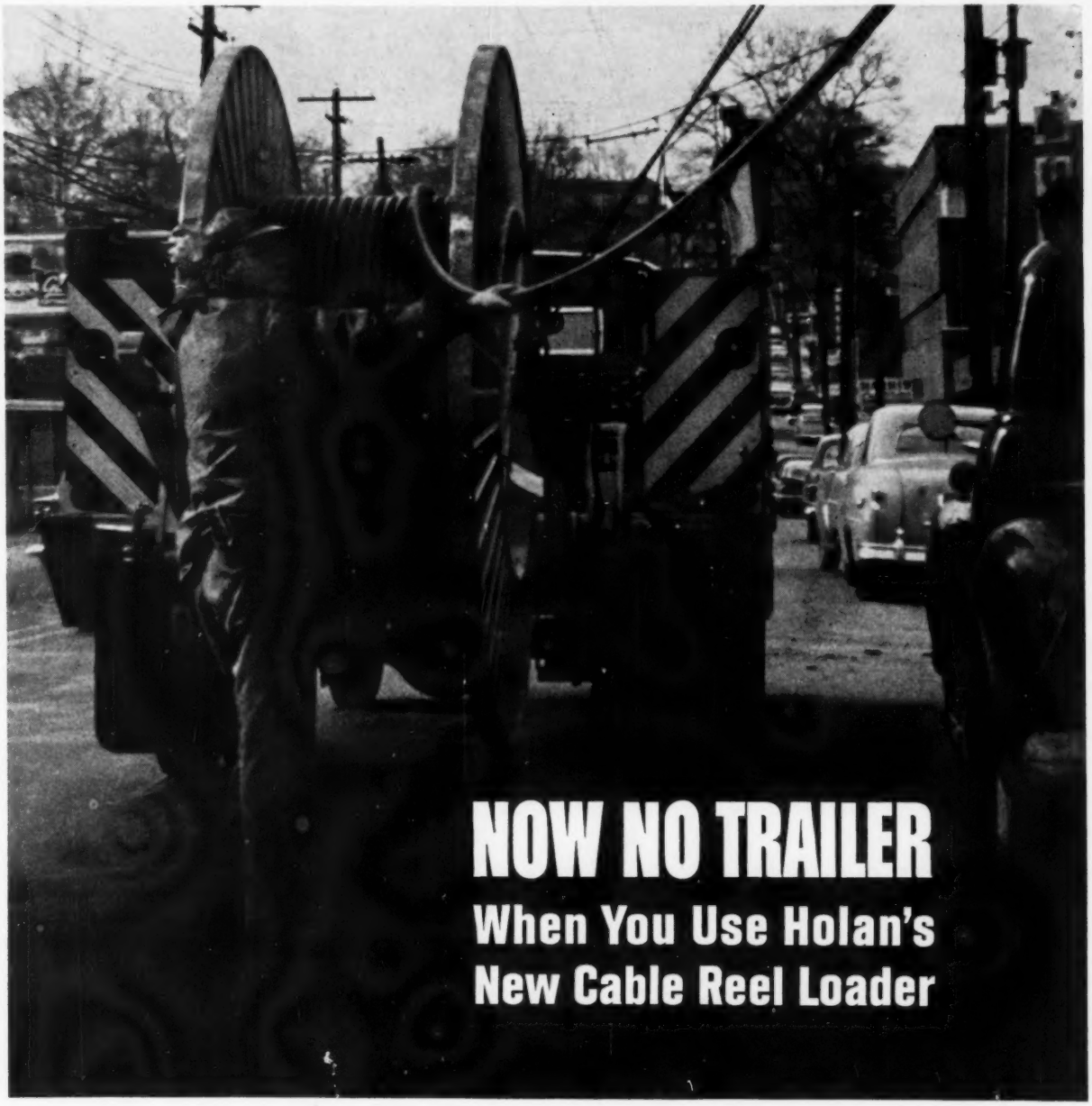

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Muscled to manage 18″ to 85″ diameter reels, the new unit hydraulically lifts 2,500 pounds in mere seconds with its Holan-designed controls and double-acting cylinders.

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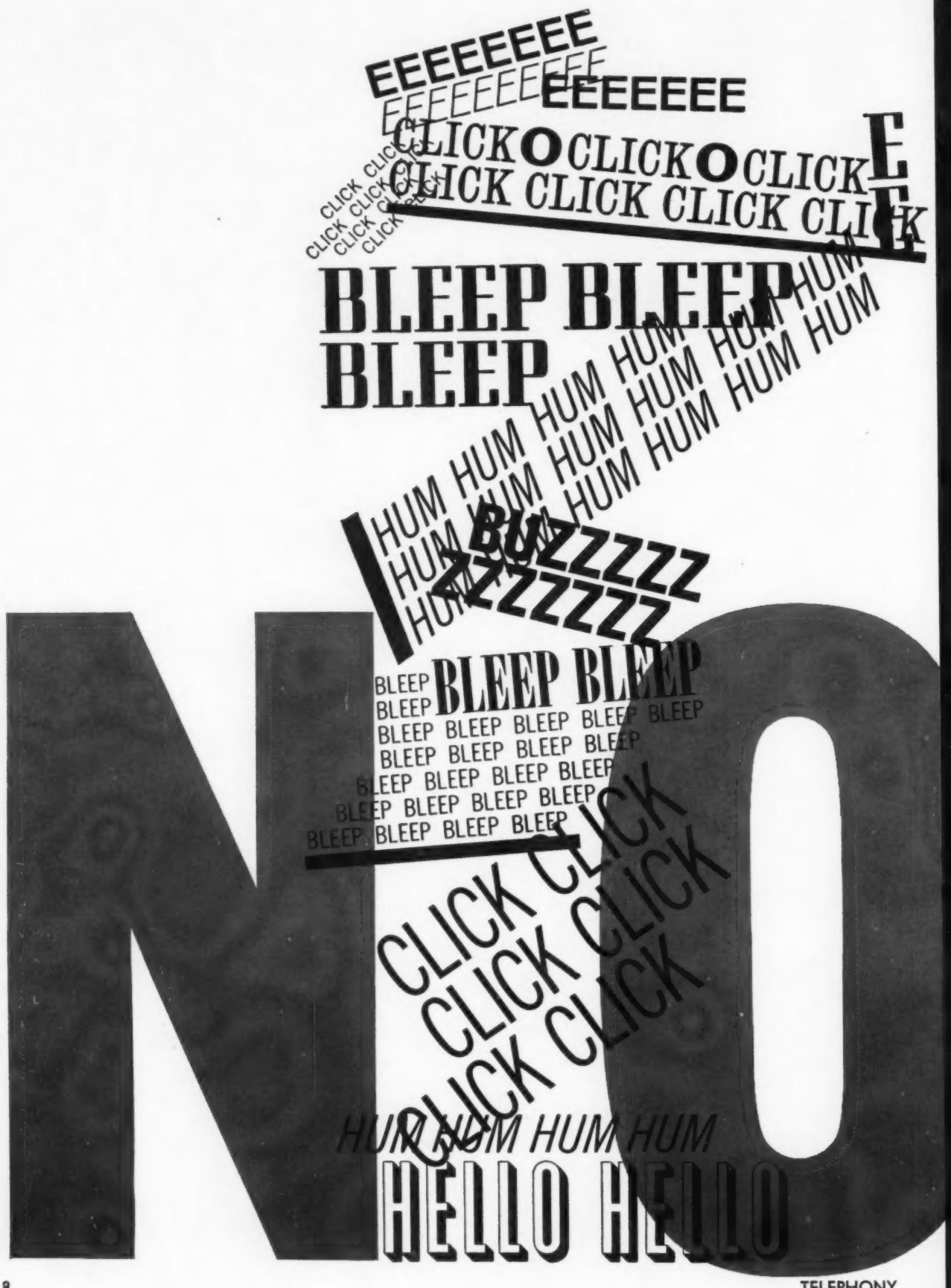
EEEEEEEE
EEEEEEE
CLICK O CLICK O CLICK
CLICK CLICK CLICK CLICK
BLEEP BLEEP
BLEEP
HUM HUM HUM HUM
HUM HUM HUM HUM
HUM HUM HUM HUM
BUZZZZZZ
BLEEP BLEEP
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BLEEP BLEEP BLEEP BLEEP
NO
CLICK CLICK
CLICK CLICK
CLICK CLICK
HUM HUM HUM HUM
HELLO HELLO

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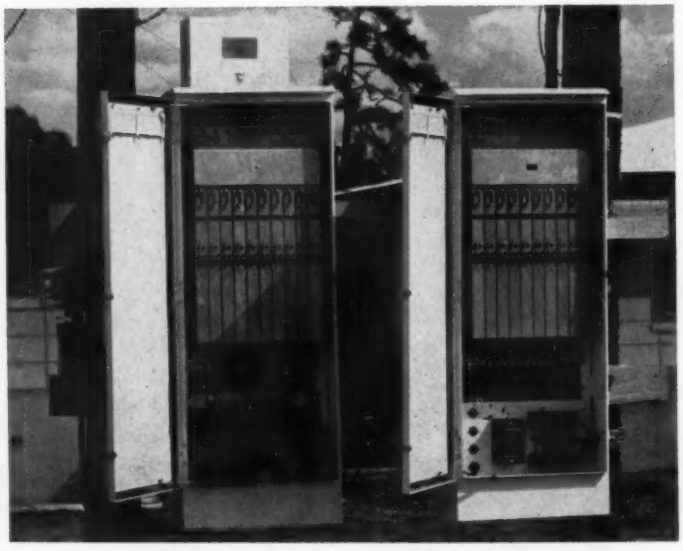

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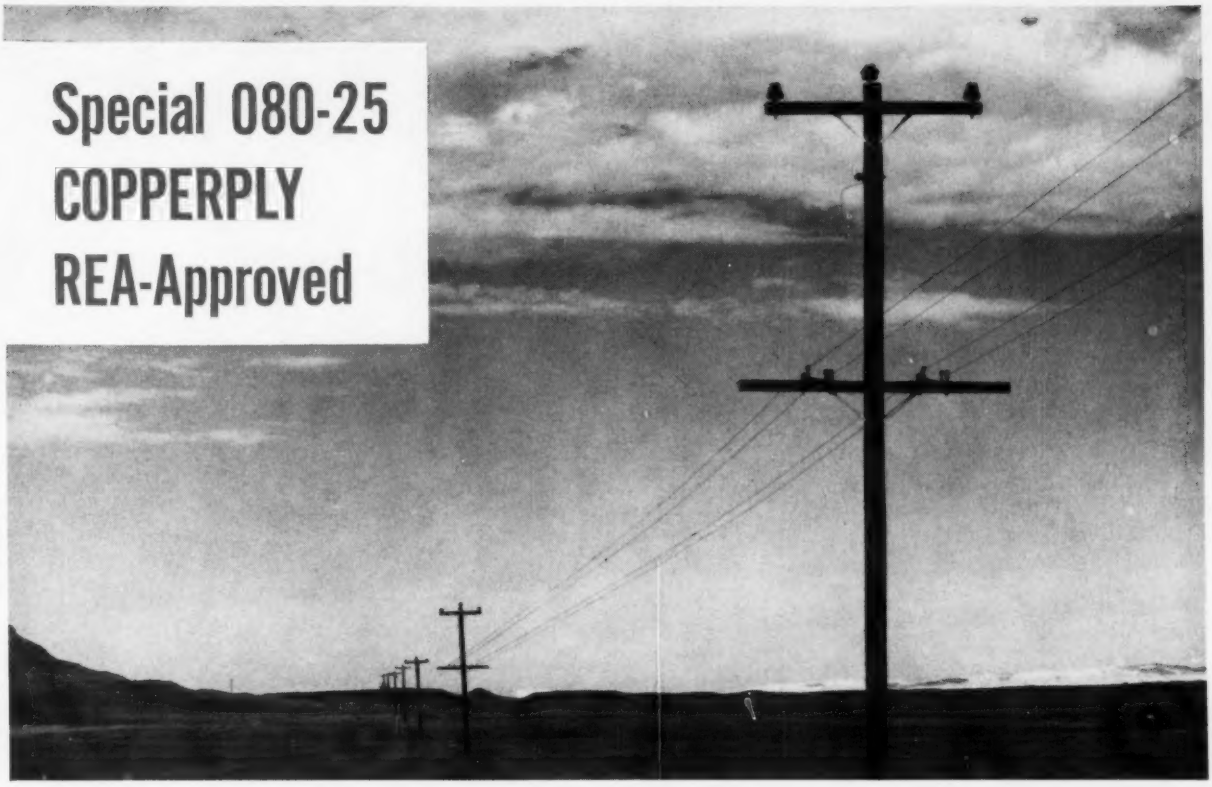
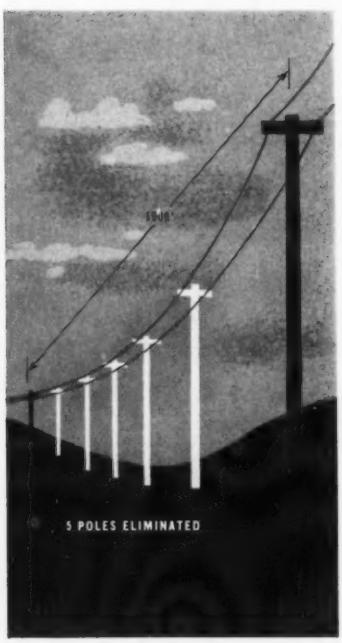


NS SPECIAL 080-25 COPPERPLY® gives greatest economy for joint pole installation



NS SPECIAL 080-25 COPPERPLY also makes possible long-span installation up to 1900 ft. on communications installations, using insulated wire and special construction design.

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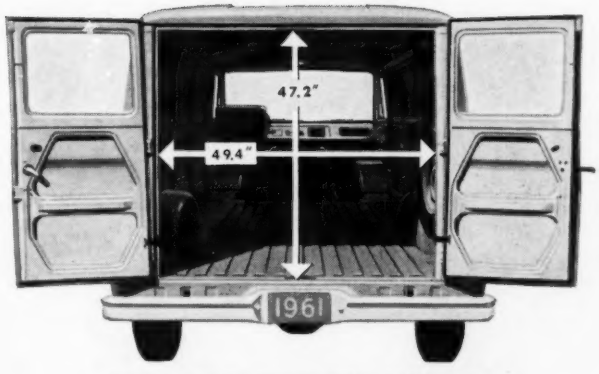
$102

SAVING ON PRICE—You can save $312 compared to even the lowest-priced popular ½-ton panel—and up to $433 against others! Saving at least..... **$312**

TOTAL FIRST YEAR SAVINGS... $414

and you keep saving

$102 EVERY YEAR!



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Bill is a man who likes action. In high school, he was a star member of the basketball and football teams, and played in the band . . . drums, of course. In 1940, months before the war began, he joined the U. S. Army. Platoon Sergeant Goodwin's overseas action included the invasion of Sicily and Italy.

Naturally, you'd expect Bill to be a live wire in community affairs. He's a member of the Elks, VFW and holds a Recognition Award from the American Legion for his services as a Post Commander. His family claims the rest of his time.

Bill is typical of the "Revenue Men" who work for General Telephone Directory Company . . . and for you. They're an asset to any community.

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IN THE NATION'S CAPITAL

BY LAWRENCE J. HOGAN, WASHINGTON EDITOR

Congress liberals opposing FCC's plan for private enterprise, ownership and operation of satellite communications system. FCC reorganization bill passed by Senate. Commission also gets entire requested appropriation.

ONE OF THE many stories which have circulated throughout the Nation's Capital about Vice President Johnson's wealth concerns the envy of Senator Everett Dirksen (R., Ill.) about the telephone in Johnson's car. Dirksen, trying to keep up with the Johnsons, had a telephone installed in his own car, and, seeing the vice president driving by one day, decided to give him a call. When Johnson answered, the Republican leader said something to the effect that the Vice President wasn't the only one in Washington with a telephone in his car.

"Excuse me, Everett," the Texan responded, "My other phone is ringing."

All of the Vice President's telephones have been ringing lately as some of his former Capitol Hill colleagues vent their steam over the administration's position on the satellite communications system. Johnson, head of the National Aeronautics and Space Council, which furnished the recommendations on which President Kennedy formulated his space communications program, has learned that several key administration allies on the Hill are opposed to the plan.

Congressman Emanuel Celler (D., N. Y.), chairman of the House Judiciary Committee, who has made a career for himself in the anti-trust field, called a meeting to line up opposition to the administration's private enterprise, limited ownership approach to the communications satellite program. Several Democrats on the House Anti-Trust Sub-committee, Commerce Committee and Space Committee were in attendance along with Senator Kefauver (D., Tenn.), another knight on an anti-business charger, and aides of Senator Humphrey (D., Minn.), No. 2 Democratic leader in the upper chamber.

The liberal legislators, who all seem to equate bigness with badness, claim the government's satellite proposal will create a monopoly and violate the anti-trust laws. This was the public statement emanating from the meeting, but, behind the scenes, the liberals in Congress are formulating strategy for scuttling the entire free enterprise approach. They believe that Uncle Sam should retain ownership of the satellite system and handle the contracting of the research, building and operation of the system. Most of those attending the session feel the government should reconsider its decision to let private companies carry the ball, that government ownership would prevent the potential problem they foresee of one-company domination, and would assure fairness in the awarding of contracts.

"If the thing goes through," Celler was quoted as saying, "AT&T would run the show and Western Electric would get most of the equipment work." This seems like an unwarranted assumption in view of the stipulations enumerated by President Kennedy and the FCC. (See "In the Nation's Capital," Aug. 12 issue).

Under the plan outlined by FCC, 10 companies would qualify as international carriers and could participate in ownership of the satellite system. FCC's position is that it would be too cumbersome for more companies to participate, but FCC will make sure that a much larger group of manufacturers will supply equipment for the system.

There may be justification for broadening the base of ownership to include manufacturers and domestic communications carriers, since the satellite system might prove feasible for the transmission of messages from Maine to Southern California or to and from our young states of Alaska and Hawaii, but it would be a real tragedy if the liberals are successful in substituting government ownership for private ownership by using the limited ownership bogey man as an excuse. This would be like amputating an arm to cure a hangnail.

The dissident solons claim that the proposal tentatively approved by FCC could not be finalized without the consent of Congress, but we doubt if this is technically correct. Congress has already given FCC the authority to regulate international communications and the satellite system would merely augment existing facilities. However, as a former member of the Capitol Hill fraternity himself, President Kennedy has been meticulously careful to get Congressional approval for his various plans, even where it was not technically necessary.

The group made no mention of new legislative proposals designed to roadblock the FCC program, though three congressional committees have recently held hearings on space communications.

Apparently, the plan is for the group of rebels to apply pressure on the White House to re-evaluate its thinking, rather than seek legislation to accomplish their objectives.

The conferees declined to publicly de-

nounce the FCC plan, but talked about sending a letter to Kennedy urging him to revise the limited ownership plan. If they send such a letter, you may be sure that Kennedy and Johnson will give it a careful reading.

More Fire for FCC Plan on Hill

During testimony before the House Commerce Committee last month, FCC Chairman Newton Minow and Commissioner T. A. M. Craven were grilled about the *ad hoc* committee, which the FCC requested the international common carriers to form to speed up the development, construction and operation of a commercial satellite communications system. Congressmen John E. Moss (D., Cal.) and John D. Dingell (D., Mich.) criticized the plan because it only included international common carriers.

Minow assured the congressmen that FCC would have a veto power over the *ad hoc* committee's suggestions and that the interests of domestic carriers and manufacturers would be protected.

Early witnesses warmed the legislators up for their battle with the FCC officials. Dallas W. Smythe, who served as FCC's top economist from 1943 to 1948, and is now a professor of communications at the University of Illinois, used professorial logic in telling the congressmen that a satellite cannot be "owned" by anyone since "no law exists as to ownership" in space. Using this logic, a ship on the high seas is not "owned" by anyone either.

Further hammering away at the points in the FCC plan, Smythe said that "the amount of time wasted by private corporations fighting among themselves for their spheres of influence in the process of creating the consortium will also be enormous." Even though he is a former bureaucrat, Prof. Smythe apparently is oblivious to the Washington red tape which makes even a minor accomplishment a major miracle.

In his campus wisdom, he also pointed out that private companies would be unable to cope with the many international problems that space communications will bring with them. This might come as quite a surprise to the international common carriers which have been dealing effectively for years with nations around the globe in a mutually successful business relationship.

Smythe's conclusion was that communications satellites should be operated by the government and eventually by the United Nations.

General Telephone & Electronics Corp. witnesses, who followed him to the stand disagreed with Smythe, naturally, but they also disagreed with the FCC plan. They feel that domestic carriers should not be excluded from participation in the program.

Lee Loevinger, in charge of the Department of Justice's anti-trust matters, also fanned the flames of controversy by repeating his oft-mentioned view that ownership of the satellite system should be broadened to prevent anti-trust violations. In response to questions from the committee, Loevinger admitted that AT&T, a prime mover in space communications, is under observation by his department for alleged anti-trust violations. This was really no secret.

Dual Approaches to Space

There are two related, but independent space communications efforts. National Aeronautics and Space Administration (NASA), which has a development contract with RCA in excess of 3 million dollars, is sponsoring one program, and AT&T is developing and *financing* the other at an estimated cost of 25 million dollars. The dual effort greatly enhances the national program, particularly since the government is not paying for the AT&T program. AT&T will even pay NASA about 6 million dollars for each satellite launching to cover hardware costs.

NASA feels that we are making great strides toward a practical communications satellite system, but there are still many questions to be resolved by research before a feasible system can be designed. The experts predict that sometime next year, the system can be operated on an experimental basis, but it will be sometime before you can pick up your telephone and bounce your message across the world.

There are differences of opinion as to various aspects of the development between the RCA-NASA team and the AT&T developers. AT&T will use different components than those of RCA and this broad scope will give the researchers a better picture of what can be expected to operate most satisfactorily in the system.

For one thing, Bell scientists feel that the ultimate operational system will perform better and have greater capability with the higher frequencies, while NASA feels that it is better to use the lower frequencies during the experimental stages, because the tracking problems are lessened on the lower frequencies. Another difference in the two plans is that the government plan calls for two responders while AT&T's has only one.

NASA has agreed to launch AT&T satellites in April and October of next year and the company has the option to call for two additional backup shots in June and December.

Agreements have already been reached with Britain and France on the international satellite communications system and the matter is being discussed with Germany, Brazil, Japan, Canada and other countries. So, in spite of all the in-fighting, progress has been made.

FCC Reorganization Plan

The FCC reorganization bill, a substitute for the administration's plan which was killed earlier, passed the Senate without the storm of difficulty which had been anticipated. Some floor amendments, which do not materially affect the bill, whittled down the opposition.

The bill still has the important provisions of allowing the FCC commissioners to delegate functions and giving them authority to use discretion in granting review.

Senator John O. Pastore (D., R. I.), author of the bill (S.2034), offered one amendment to appease Senators Frank Lausche (D., Ohio) and Everett Dirksen (R., Ill.), which requires that those to whom work is delegated must have qualifications at least equal to those of a hearing examiner. Dirksen offered another amendment specifying that the FCC may not delegate a review matter to the same person who made the original decision.

On the other side of the capitol, H.R.7856, the House version, also passed, but not without a struggle. A floor battle against the bill by Rep. Walter Rogers (D., Tex.) resulted in a roll-call vote.

Rogers objected to the legislation because it would give government employes the power to make final decisions in review cases, and he pointed out the House had already rejected this idea by voting down the previous plan endorsed by the President. Rep. Oren Harris (D., Ark.), author of the bill, and Rep. J. Arthur Younger (R., Cal.) offered some tightening up amendments, but Rogers still wasn't happy. The bill passed anyway, 198-150.

There are a few minor differences between the House and Senate versions which now must be ironed out before the legislation goes back to both houses for final vote.

FCC Gets Budget Back

There was another indication recently that FCC Chairman Minow's shop is no longer in the Capitol Hill doghouse.

After the House of Representatives trimmed the FCC budget by $125,000, the Senate voted to restore it, authorizing the entire $12,525,000 requested by FCC.

The report accompanying the Senate bill said the appropriations cut would

(Continued on page 49)

The Development of Airborne Radiotelephony

By HOLMES BAILEY*

THE FEDERAL Communications Commission, on Sept. 15, 1957, granted experimental authorization for ground stations in Chicago and Detroit to be used for public radiotelephone communications with aircraft. This was the culmination of a long period of study and a decision by the Bell System to establish a nationwide, air-ground public radiotelephone system solely for commercial airliners and private planes. At that time some 600 planes were obtaining public radiotelephone service through the coastal harbor stations in the United States on a secondary basis. Since watercraft were given priority, airplane calls were frequently subjected to long delays. However, this service did provide a means for direct connection between planes and the land telephone network.

Although this first experimental public airborne radiotelephone service was limited in its coverage area, the tests showed that within that area the service was superior to that previously available. Accordingly, the Bell System made application for additional stations in order to increase the service area. On Aug. 15, 1960, additional stations located in Newark, N. J.; Washington, D. C., and Pittsburgh, Pa., were opened to service. These additional stations, together with those first used experimentally, have given substantially complete coverage at 5,000 feet from about 100 miles west of Chicago to about 100 miles east of New York. Service could now be available to about a third of all private and corporate aircraft and to almost a fourth of all commercial flights when flying at altitudes above a mile in height.

These experimental stations were established on frequencies assigned to domestic public land mobile service on a shared basis. However, on Jan. 25, 1961, the Federal Communications Commission amended its rules and now has allocated six channels exclusively for air-ground service. The channel assignments are given in the following table:

Channel Numbers	Ground-to-Aircraft Frequencies	Aircraft-to-Ground Frequencies
Signaling	454.99 Mc	
1	454.95 Mc	459.95 Mc
2	454.90 Mc	459.90 Mc
3	454.85 Mc	459.85 Mc
4	454.80 Mc	459.80 Mc
5	454.75 Mc	459.75 Mc
6	454.70 Mc	459.70 Mc

With these channels available on a nationwide basis, it was possible to lay out a master plan to give service to aircraft flying on established airways within the United States except for Alaska and Hawaii. This has been done by engineers of the American Telephone & Telegraph Co., using as criteria the avoidance of co-channel interference at all altitudes up to about 30,000 feet and providing substantially continuous coverage at an altitude of 5,000 feet.

Fig. 1 is a highly simplified first approximation of coverage from a ground station with antenna height, h_1, to an aircraft flying at an altitude of h_2, assuming a smooth earth and atmosphere refraction corresponding to an earth of 4/3 radius. In general, the coverage extends to distances of about 9/10 of the sum of D_1, and D_2. From this simple diagram it is apparent that (1) to avoid co-channel interference at 30,000 feet, the same frequency cannot be used at any two ground stations spaced less than 500 miles apart, and (2) to obtain substantially complete coverage at 5,000 feet, ground stations must be less than 200 miles apart.

*Mr. Bailey is product manager for communications equipment, AC Spark Plug Division, General Motors Corp.

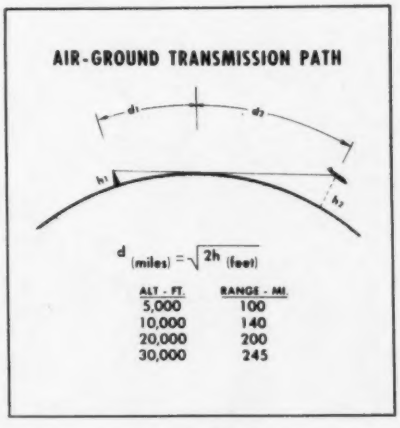

Fig. 1

The so called three-channel route plan has been derived from these fundamental considerations. In this plan, channels numbered 1, 2 and 3 are used at successive ground stations over any individual route followed, in order, by the same numbered stations as required to cover the length of the route. While channel 1 is within 200 miles of channel 2 and similarly channel 2 is within 200 miles of channel 3, channel 1 is never less than 500 miles from another channel 1, nor is channel 2 within less than 500 miles from the succeeding channel 2, etc. Of course, where routes intersect or branch out, it becomes necessary to employ more than the three channels to meet these two criteria.

It is expected that six-channel operation will go into effect on Jan. 1, 1962. During 1962 a series of ground stations along the major airline traffic routes from coast-to-coast across the continent will be placed in service. Another series of ground stations will be built in the southeastern and northeastern United States to supplement the present five-city system. In following years, both Bell and Independent telephone companies will extend the service into other areas to provide substantially complete coverage of the continental United States.

Canadian interest in air-ground public telephone service has already been evidenced and it is probable that Canadian air-ground installations will follow the same pattern established in the United States. Most logically, the initial installations will be in the major airline terminal areas followed by the establishment of intermediate ground stations but all being a part of a master plan. It seems apparent that adequate ground station facilities will be made available to meet the initial requirements for air-ground public telephone service for the next few years.

Ground stations are only one end of the system needed to give adequate telephone service to airborne passengers. The aircraft must also have adequate radiotelephone equipment installed in a satisfactory manner. This avionics equipment should provide its user with the convenience of telephone use to

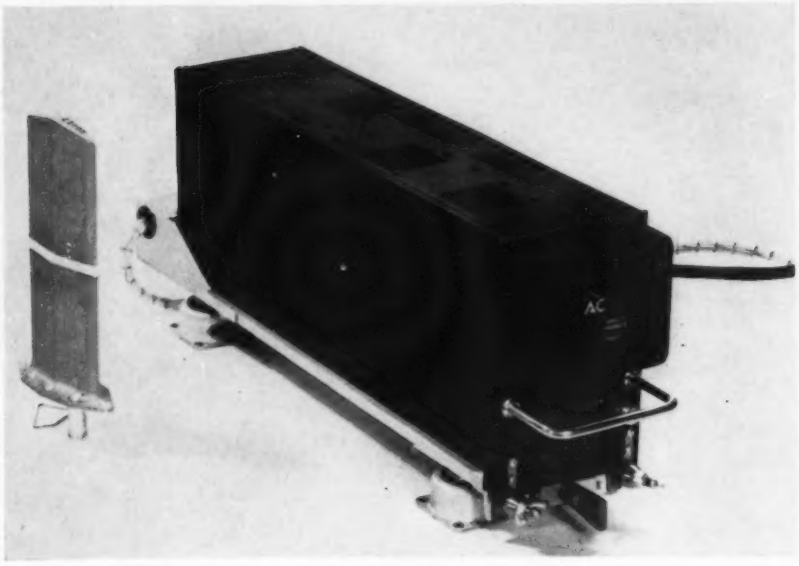

Fig. 2

which he is accustomed in his home or office. As in coastal harbor service, the airborne radiotelephone will be customer owned.

This winter, AC Spark Plug, the Electronics Division of General Motors Corp. in Milwaukee, Wis., will have available for aircraft owners, the Skyphone, which has been designed specifically for this public air-ground radiotelephone service. *Fig. 2* is a photograph of this new equipment (less control head and handset). The control unit with its hang-up handset may be located anywhere on the plane where it is convenient for use of the passengers and crew. The antenna will be mounted on the lower side of the fuselage. The 1/2 ATR, 22-pound transmitter-receiver unit, with self contained power supply and selective signaling decoding equipment, is to be mounted with other radio equipment on the plane.

The use of this equipment is quite simple. To originate a call in an airplane the calling party, after lifting the handset from its cradle, must select the appropriate channel for the coverage area within which the plane is then located. This is done by depressing a selector bar on the face of the control unit until he gets the best ground station tone signal and the proper channel number appears. After listening to make sure that the desired frequency is idle, he depresses the push-to-talk button on the handset momentarily and then listens for response from the aviation operator in the telephone central office. After receiving her query, he furnishes her with the necessary information to enable her to complete the landline telephone connection as he would on any ordinary person-to-person telephone call. After the called party answers, the conversation proceeds as in any ordinary long-distance call. When the call is finished, the calling party simply replaces the handset in its cradle. Private and business aircraft may have calls billed to their Skyphone telephone number. Passengers on commercial airliners will place credit card or collect telephone calls.

Passengers in radiotelephone equipped planes are likewise available by telephone to people in their homes, offices, telephone booths, radiotelephone equipped vehicles or other aircraft. Anyone wishing to call an aircraft passenger must first have information about the aircraft's approximate location when the call is placed. He dials the long distance operator to whom he gives the necessary information. The aviation operator at her position in the telephone central offices, as shown in the photograph of *Fig. 3*, then dials the individual airplane over the signaling channel. Every ground station for aviation service has the signaling channel available and all airborne radiotelephone equipments for the public airborne telephone service automatically revert to the signaling channel at the end of each conversation. The signaling is received by all aircraft within range of the ground station but the bell, indicating an incoming call, rings only in the aircraft being called. Incidentally, the dialing operation also transfers the airborne radio equipment to the proper "talking" channel. The called party (in the plane) merely lifts the handset from its cradle and responds to the call. From that point on, the conversation progresses in the same manner as with an airborne originated call.

Future developments will doubtless make airborne telephones even more like telephones in the office and at home. Elimination of the push-to-talk button is expected and direct dialing from the plane to stations in the land telephone network will not be far behind. Continuous voice identification of the ground station to the airborne user also seems likely.

The Skyphone makes airborne passengers available to the telephone and radiotelephone equipped public. It represents the "third dimension" in modern public telephone communications. The next few years will see phenomenal growth in the use and application of this new telephone service. Expansion of the existing ground stations network is now in progress and the airborne radiotelephone equipment will be available soon.

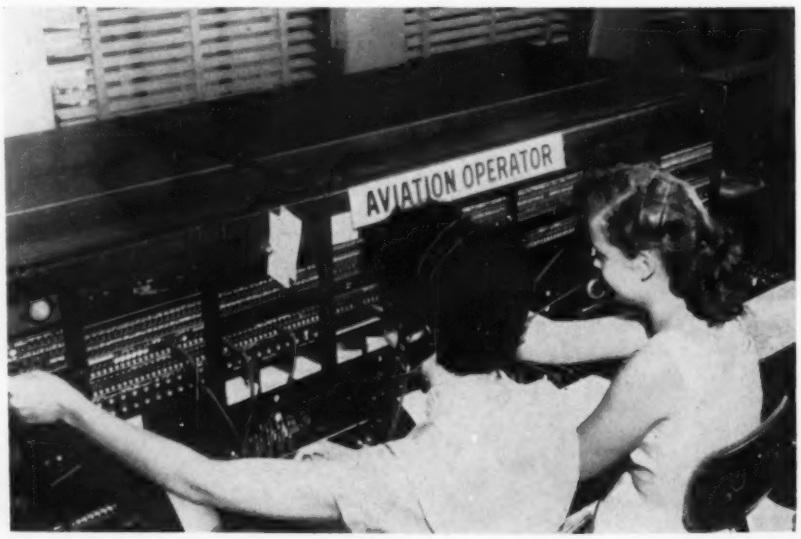

Fig. 3

Annual Review

New Developments in Telephony

By RAY BLAIN, Technical Editorial Director

THIS IS THE sixth article in a series describing various new items of equipment and their application in the telephone business. The first article appeared in the July 15 issue; the second: July 22; third: July 29; fourth: Aug. 5, and the fifth: Aug. 12.

Readers desiring additional information on any of the products described should write the manufacturers or TELEPHONY.

* * *

Ventilating Heater with Generator Attached. (Fig. 50). The MoPeCo ventilating heater is equipped with a squirrel cage type blower wheel attached to a Briggs and Stratton propane converted engine. The blower wheel pulls fresh air through the air intake screen and forces it upward and out through the air discharge outlet, and through a flexible hose into the manhole or area to be ventilated.

The burner used is a forced draft, two-stage inspirating-type and is ignited by a spark from a special magneto engine coil. The gas safety valve and burner ignition system is built into the heater in such a manner that it is impossible to ignite the burner unless the engine is operating.

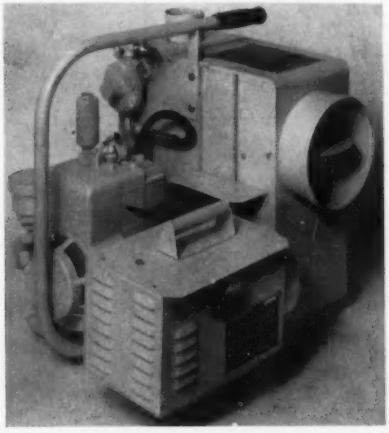

Fig. 50. Ventilating heater with generator attached.

Once the burner is ignited, the combustion air from the burner is forced up from the combustion chamber to the heat exchanger. Fabricated of stainless steel, with a scaling temperature of 1,600 degrees F., the heat exchanger and its stainless steel baffles are heated by the combustion air which passes back and forth and out through the exhaust into the atmosphere.

The incoming ventilating air, forced through the system by the blower wheel, passes up and around all sides of the heat exchanger baffles which have been heated by combustion air. This ventilating air, safe and breathable, is heated to as much as a 96 degree F. temperature at this point, and is further forced through the air discharge and through the flexible hose into the desired underground area. The heat of the fresh ventilating air may be regulated by the burner control valve from a minimum of 10 degrees F. to 96 degrees F.

The Model PE-G unit, shown in the accompanying photo, weighs 75 pounds, less the generator. Its dimensions are 19 inches long, 21 inches wide and 21 inches high. The BTU rating is 10,000-45,000 per hour at 10.5 inch water column pressure. The air delivery is 300 to 800 CFM, with one eight-inch outlet. The fuel is liquefied petroleum gas (propane), approximately 95,000 BTU/gal.

The 800-watt ac generator is detachable and is mounted in a quick-mount bracket that requires no screws or loose pieces. The generator weighs 42 pounds. Its dimensions are 13 inches long, seven inches wide and 11 inches high. Its output is 110 volts, 800 watts ac. The generator is equipped with a safety carrying handle and guard. The units all have rounded corners to prevent snags in equipment and clothing of workers.

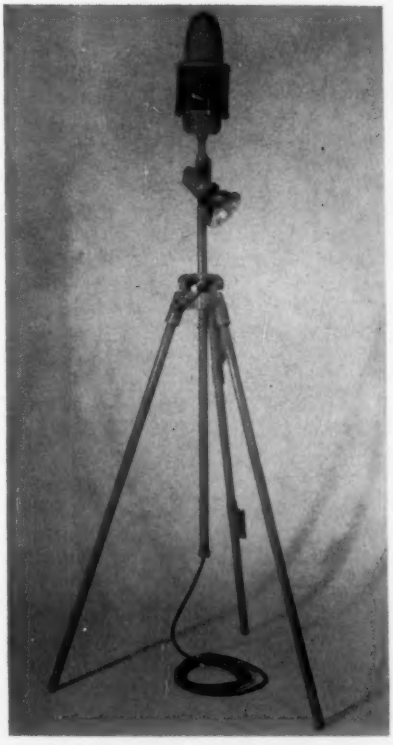

Fig. 51. High level warning beacon.

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High Level Warning Beacon. (Fig.

51). This new MoPeCo accessory is designed to give safety warning at a high level where motorists several cars back, in a line of traffic, may be informed of a work area ahead. The floodlight attachment will also illuminate a manhole area.

The stand is a folding tripod, 5 feet high that extends to 8 feet. It is constructed of ¾-inch pipe, is painted yellow and weighs 37 pounds. A 150-watt lamp maximum is used in the floodlight. The signal flashes 60 times per minute. The lens can be furnished in either amber or red. This flasher can be furnished for: 115 volts dc, 115 volts ac, or 115 volts ac or dc.

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Wire gripping Oblique Cutter. (Fig. 52). These recently-introduced Mathias Klein oblique cutter pliers have steel springs between the jaws. When a wire

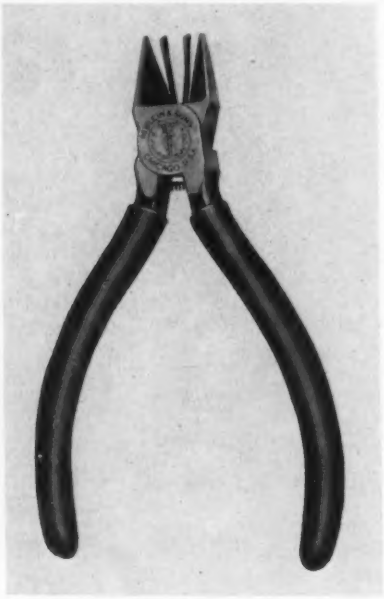

Fig. 52. Wire gripping oblique cutter.

is cut, the clipped end is held securely by the springs preventing it falling into the assembly or flying off, endangering eyes. This cutter is made in two sizes: 4⅛ inches long and 5 inches long. A coil spring keeps the jaws open and ready for use. These pliers also have plastisol covered handles.

•

Telephone Installer's Tool Pocket. (Fig. 53). Mathias Klein also has recently developed a new tool pocket, specially designed for telephone installers. Made of highest grade harness leather, the pocket is riveted throughout to assure long life. Ten separate compartments provide a convenient place for a wide variety of pliers, screw drivers, wrenches and other tools. It

Fig. 53. Installers' tool pocket.

is designed with slots for fastening to the belt. The ring at the side holds tape thong.

•

Line Throwing Gun. (Fig. 54). This Harrington & Richardson Arms Co. line throwing gun has facilities that can be used to extend wire and cable across deep canyons, up steep cliffs, and over heavily tree-covered areas.

This gun kit, easily carried or stored, consists of: .45-70 caliber smooth bore hammer type gun, with canister attached; genuine walnut stock with recoil pad; one box of 20 cartridges; four rolls of nylon line, each 550 feet in length; four wood re-wind spindles; 10 brass projectiles, 14 feet long; one cleaning rod with slotted tip; one cleaning brush; one can of solvent, and a detailed instruction sheet. The gross weight of the kit is only 30 pounds and is packed in a metal reinforced fiber case 31 inches long, 10 inches wide and 7 inches deep.

Fired at a 35-degree angle from the shoulder, the gun is able to project the cord a distance of 350 to 450 feet over rugged terrain.

•

Stud Driver. (Fig. 55). Sileps, Inc.'s Fix Rammer Model "Control-A-Stud," for driving studs into concrete and steel, is actuated by power transmitted directly to a plunger which is then moved at a relatively slow speed, thus actually *pushing* the study into the material. The stud automatically stops when the plunger discontinues pushing it.

Breakage of concrete around the stud (spall) is also eliminated. If a stud has not penetrated to its proper depth for any reason, it may be reclaimed by pushing it farther into the material with another charge.

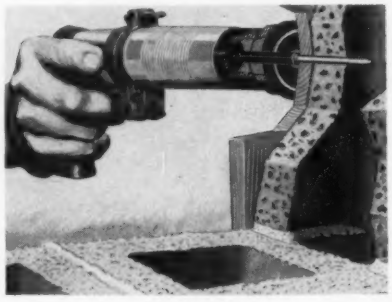

Fig. 55. Stud driver.

Since powder marks have been eliminated through a special gas control chamber, this device may also be used on inside and finished surfaces. This tool can be used for driving studs into hard concrete, thick steel, soft cinder blocks or inconsistent masonry,

Fig. 54. Line throwing gun.

with a special powder charge. An automatic control system regulates the depth of penetration and stops the stud from coming through the opposite side. Special guards or fixtures are not required and this tool may be used in corners and narrow spaces with convenience.

With a touch of a lever the tool opens. The stud is loaded from the muzzle, and the charge from the breech. A quick snap closes the tool. After firing, the spent shell is automatically ejected as the tool is opened. No breech plugs are involved. This tool will drive threaded and nail type studs in ¼-inch, $\frac{5}{16}$-inch and ⅜-inch sizes.

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Light Weight Soldering Iron. (Fig. 56). This new American Beauty electric soldering iron provides all the

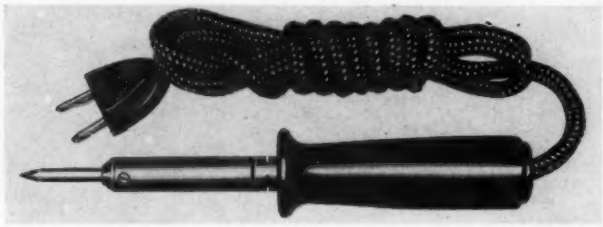

Fig. 56. Light weight soldering iron.

capacity and job capability formerly available only in comparable soldering irons almost twice its size.

With its short, stainless steel casing —safety flared handle—full ¼-inch tip —and 60 watts input (75 watts optional)—this new iron is ideal for solving soldering problems that demand medium capacity coupled with operator ease-of-use and high speed operation.

This new soldering iron is available in standard voltages. The diamond point tip is standard, but can be equipped with chisel type if specified. All irons are equipped with attached 5-foot length of super-flexible heater cord. The neoprene-jacketed cord will be provided without additional charge if desired. Available also with three-conductor cord, neoprene jacketed with NEMA type plug cap, one wire-grounded—at extra charge. A separate heat insulated stand is furnished with each iron.

•

Plastic Sign. (Fig. 57). A new and versatile sign — Convert-a-Sign — has been announced by Gladwin Plastics, Inc. It is a large 24-inch double faced unit designed for booth top, pole, wall or ceiling mounting.

The Convert-a-Sign is constructed of Acrylic plastic and aluminum with fluorescent lighting.

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Corner Paystation. (Fig. 58). Gladwin Plastics also recently announced

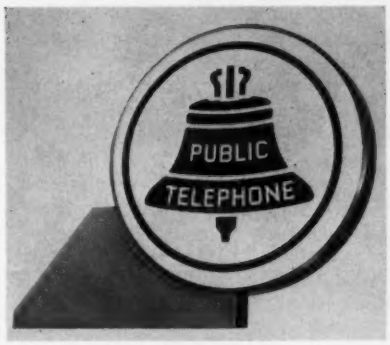

Fig. 57. Plastic sign.

a modified design of its Boothette for corner paystation installations. Designated as the "Corner-ette," it is adaptable to multiple installations for use around corners, or as an island grouping.

The Corner-ette is designed for indoor and outdoor use, and is complete with its own lighting and signing.

•

Power Cross Protector. (Fig. 59). Arresters capable of protecting open wire telephone lines from the hazard of high voltage power lines have been available for many years.

New requirements for higher current carrying capacity to provide greater protection to telephone plant have resulted in new designs of the carbon electrodes. The accompanying photograph shows the pie-shaped carbons which present a greater surface area to the gap and materially improve the current carrying capacity.

Fig. 58. Corner paystation.

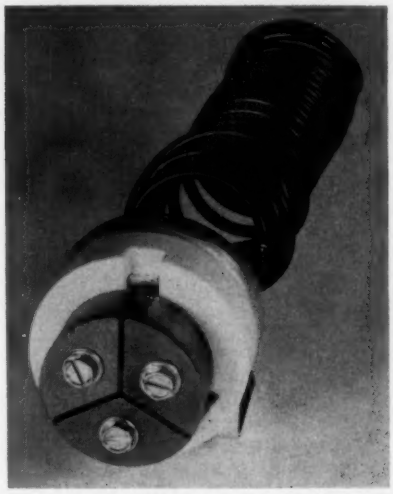

Fig. 59. Power cross protector.

Cook Electric Co. has upgraded its Hy-Cap power cross protector which now employs the new type electrodes.

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Nylon Jumper Rings. (Fig. 60). With the availability of chemically stable,

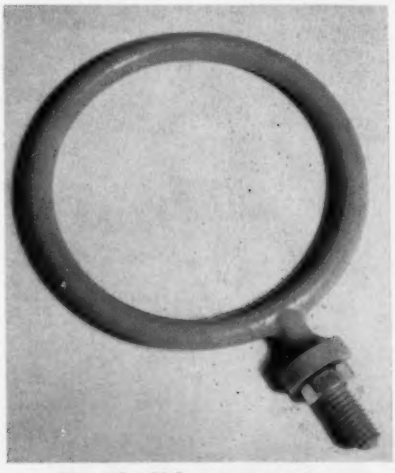

Fig. 60. Nylon jumper ring.

and mechanically strong plastics it has been possible to produce a jumper ring which meets all the requirements for insulation and mechanical strength necessary for use on distributing frames. Cook Electric also has developed a nylon jumper ring for use as original or replacement material for distributing frames.

•

Battery Charger. (Fig. 61). The new

Cook Electric series CEC, single phase 48-volt battery chargers have been fully developed for charging capacities of 6, 9, 12, 18 and 24 amperes. The rectifying elements are high quality silicon diodes which avoid the necessity of readjustment of controls due to aging. Regulation of ± ½ of 1 per cent is maintained on all sizes of chargers with ± 10 per cent line voltage changes, over the full range of charging current values for which the chargers are designed.

Fig. 61. Battery charger.

•

Central Office Protectors. (Fig. 62). Reliable Electric Co. is now marketing a series of 100-pair and 50-pair central office protector assemblies termed "Connectors." They provide electrical protection for inside telephone equipment and are designed for installation in new or existing central office main frame rooms as well as in PBX or PABX and sub-exchanges.

The connector head consists of a cast resin body and a metal faceplate and contains 50 or 100 pairs of twistlock inserted protector units. These protector units are of two types. One has a standard central office type heat coil; the second a dummy heat coil.

The stub cable is 51-pair or 101-pair plastic cable, with either 22 or 24-gauge conductors. The stub cable is wire wrapped to projecting terminals at the back of the connector, while similar square wire terminals protrude from the right side of the connector for the termination of the office wiring. Test points for each pair are arranged on the opposite side.

The connector protector elements and protector contacts are completely enclosed in a high grade plastic assembly, free from dust. The "dead front" of the connector protects personnel from inadvertent contact with any potential that might be on the conductors and reduces the possibility of interference with service. Circuits may be opened without removing the protector assembly.

The connector can be pre-wired at the factory with even count, fully color coded stub cable, which permits easy and fast installation.

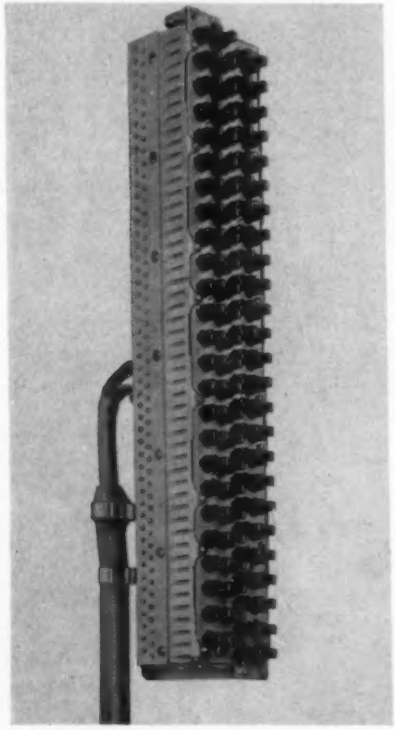

Fig. 62. Central office protector.

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Splice Case Terminal. (Fig. 63). This new splice case terminal contains the multiple cable pair selection feature found in Reliable ready access terminals. This arrangement permits changing terminal counts without opening the splice case. The units can be installed on paper or plastic-insulated cables with aluminum, lead, alpeth or stalpeth sheath. The terminal housing is equipped with a 26-pair bundle of plastic-insulated, color-coded conductors that are half-tapped to the distributor cable at each terminal location. The housing will accommodate either one or two six-pair terminal blocks for terminating one to 12 cable pairs.

These units are available for straight through or branch type splicing of cable sizes up to 2.9-inch OD.

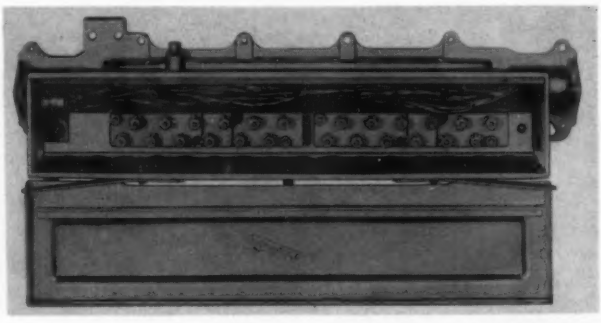

Fig. 63. Splice cable terminal.

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Wire Grip. (Fig. 64). The Reliable Type "S" wire grip is a new drop wire support. It is a single unit design fabricated of stainless steel. There are no parts to assemble; it can be easily installed by a lineman wearing gloves. The design of this new grip permits several to be used on one drive hook. Drop wires can be quickly removed from the "S" grip regardless of the wire tension or the length of time they have been in place. They are reuseable indefinitely.

Fig. 64. Wire grip.

In severe pulling tests, the "S" wire grip has held all recommended drop wires to their full rated conductor tensile strength without slipping. At loads far in excess of those encountered in normal field conditions, there is no insulation damage. Vibration test results have been excellent.

Reliable Type "S" Wire Grip is recommended for the following type and size drop wires:

Dumbbell, 17-20 AWG
Reinforced Parallel, 18-20 AWG
Non-reinforced Parallel, 17-20 AWG
Twisted Pair, 18-20 AWG

•

Drop Wire Clamps. (Fig. 65). Reliable Electric also is now marketing its improved P-6 and PS-6 telephone drop wire clamps. The P-6 is an all stainless steel clamp without a shim; the PS-6 is the same all stainless steel clamp with a new plastic shim. This shim has larger tabs that make it easy for the

(Continued on page 52)

Marketing Makes Money

By R. PARKER SULLIVAN

PART IV. Parts I, II and III appeared in the July 29, Aug. 5 and Aug. 12 issues.

ONE OF THE MOST compelling reasons for all telephone companies to understand, interpret and apply the marketing attitude toward their daily operation is the competitive situation that we find existing today in all of our markets regardless of the size of the exchange.

Since World War II there has been a broad-scale evolution, if not a revolution, in the field of communications, and the changes are of such magnitude that each one of us in the telephone business needs to understand them, not only in light of the effects they have had on our present customer markets, but we must be able to visualize the possible far-reaching effects that they could have with respect to our future market potential.

Customers Want Changes

Our customers today are anticipating some dramatic improvements in their communications to match the terrific advancement that has been realized recently in electronics and other related fields. Today, these customers are anticipating these improvements—tomorrow they will be demanding them. If we in the telephone industry cannot, or do not provide them with the kind of communications they want and need, someone else will; for it is a well-known fact that a vacuum cannot long exist in the face of customer demand.

The national communications market potential is referred to in terms of billions of dollars and the competition to share in this potential will be exceptionally keen. We in the telephone industry face the real possibility of not only failing to get our fair share of the future potential, but there exists an equally real possibility that we might lose a very substantial portion of our existing, traditional market unless we gear up to meet and beat this competition.

Replaced Telephone Service

One of the best illustrations that I can think of to help us realize the existence of this competitive threat today is the sales experience of a private communications company with which I am familiar. This company does business in an eastern city and it maintains a sizeable sales force to call on various types of business and industry for the purpose of selling them "internal communications" systems. After 13 months of doing business, this firm estimated an annual market potential of approximately 1¼ million dollars. The major portion of this anticipated market would be derived from what it calls the sale of "telephone communications."

An analysis of 16 actual sales calls reveals 15 sales completed, the number of extension telephones was reduced as a result of all of the 15 sales that were made, nine of the sales resulted in the reduction of the number of trunks, and six of the 15 sales resulted in the removal of the switchboard.

Sales to Satisfied Customers

These results point out very graphically the far-reaching effect of this kind of competition on telephone companies. Every one of these sales was made to a satisfied telephone customer. The private communication company offers its products and services on the basis of an outright sale, or on a lease arrangement, and the customer may handle his own maintenance or the company will maintain his equipment for him under a contract. The most convenient arrangement to the customer is available through the salesman. This alone gives him some advantage over the service offering by the telephone company.

I am confident that it is not necessary to point out the effect of outside sales of this kind on our present earnings position, but of equal importance is the fact that these customers, from the moment of the sale, are no longer basically customers of the telephone company, but instead they are now looking to someone else to provide their future communication requirements. These customers can be considered lost, not only for today, but for some considerable time in the future, and we may possibly never recover their business.

Not Confined to Big Cities

Let me assure you that sales activity of this type is not confined to the big cities. We have experienced it in a number of our General exchanges recently and I am confident that all of us will witness a marked acceleration in this area of competition in the immediate future. The stimulation in sales activity will be brought about at least partly by the market potential that the private communication industry visualizes. I recently saw figures that indicated they forecast a market potential of from 35 to 40 million dollars from the sale of "telephone communications," and an additional 40 to 50 million dollars annually from the sale of "other communications."

Today, our telephone companies have a better product, an excellent reputation for reliability and dependability of service. We enjoy excellent customer relations. These are important advantages that enable us to maintain our present position of leadership and effectively compete for a fair share of this communications market potential; however, we must realize that to maintain our advantage we will have to effect changes in our products and services, in our pricing, in our promotional efforts and a constant strengthening of our relationship with our customers is essential.

In Communications Business

I believe it is particularly significant for us to realize, at this point, that this outside competition is developing in the field of communications and this would suggest that, in order for us to compete effectively, each and every one of us must consider ourselves to be in the communications business and not to think strictly in terms of traditional telephone service. To protect our present position, and to insure reasonable participation in future growth of the communication market, we must convince our customers that the telephone company is the best qualified source from which they can obtain any and all of their communication wants and needs. We may not, in every instance, actually provide the item of communication, but through our efforts our customers can obtain it.

It is vitally important that we convince our business customers that we have their best interest as our primary concern, and, therefore, it is to their best interest to work through us to obtain all of their communication requirements. It is this firm conviction that has prompted the General system to carefully contact our business customers on a planned and directed basis to work with them individually in order to satisfy their communication requirements.

The recognition of stimulated outside competition should be sufficient to enable all of us to realize the necessity of modernizing certain of our policies, our services, and our products in order to insure our future.

45 Items Offered

Recently, at a newsstand in one of the airline terminals, I had demonstrated for me a pocket-size, two-way communication device that guaranteed high quality transmission up to 5 miles. The purchase price was $69.95. It took only a mild show of interest on my part to have the attendant at the sales counter give me an effective demonstration and a very convincing sales story. While this device, in itself, may not appear to be a major threat to our market potential, it does provide basic communication between people separated by distance, and this is our business.

This is only one of countless such products that can be found today. A quick check of our files discloses over 45 items that are currently offered, each one of which used the word "phone" someplace in its product name. None of these products are offered by a telephone company. Competition from this kind of product, along with private microwave systems, and similar types of service offerings, constitute competition for each and every one of us.

Some Are Worthless

The magnitude of the communication market potential has led countless numbers of people to attempt to participate in it. They are offering a variety of products of all styles and types—some of them may be good, some may be classified as fair, and others, I'm sure, could be classified as worthless. However, each one is being actively promoted and I believe we should view this activity from the standpoint that every sale of communications equipment that is consummated by any company other than a telephone company, represents not only an inroad into our market potential, but also an opportunity for someone to weaken the bond we have established between our customers and ourselves.

This bond has been developed through the years as a result of careful planning on our part, and its value to us justifies even more careful planning to insure its continuation. We in the telephone business have built a reputation for providing fast, accurate, dependable service at a minimum cost consistent with adequate earnings. I believe we have a responsibility of protecting this heritage.

In order to fulfill this responsibility we need only to become acutely aware of the situation that confronts us and then, given reasonable time, we can be confident that the telephone industry will once more meet the challenge and find the proper solution to the problem.

Time Is Running Out

The catch, however, is in the fact that time is running out. Our awareness must come today and our plans and programs tomorrow. Our competition will not wait and, unless we move rapidly and effectively, we may find ourselves furnishing only the nonprofitable portion of the communication market.

A brief review of the transition that has taken place in our traditional telephone market may help us understand what is happening and also assist us in developing plans to cope with these changes.

Prior to World War II, the general communications market was comprised primarily of facilities to transmit the spoken word, or to relay messages through telegrams or teletypewriters over distances. There existed also a very limited use of radio in this communication field at that time.

The tremendous demands for reliable communications that developed during the war resulted in the introduction of many new techniques as well as new service. At the conclusion of the war, we found many companies, and a great number of individuals, with knowledge and experience that enabled them to develop communication equipment that was virtually trouble free, and they introduced new techniques that resulted in improved customer service and, at times, effected a reduction in the cost of providing the facilities. This new-found knowledge and capability, combined with the greater realization on the part of our business customers of the true value of good communications, brought about a tremendous expansion in the revenue potential that could be realized from the sale of communications.

Use Company Identification

The most logical source for these new enterprises to attempt to sell their products was the telephone customer. After all, this prospect had been exposed to communications and had developed a sense of value in relation to it, so he represented a ready-made prospect. A great many of these new enterprises are endeavoring to make their economic fortune by identifying themselves, through some manner or means, with the telephone industry, thus benefiting directly from the customers' trust and confidence that we have built through the years. This approach can be clearly identified by simply analyzing the product name of countless gadgets that are being offered today and, in some instances, an indication can even be seen in the corporate identity.

We in the telephone industry have spent countless sums of money and years of time and effort building this confidence, and now is the time for us to capitalize on it to the advantage of our customers and ourselves. The technical capability of our telephone industry is unequalled anywhere in the world.

Must Keep Leadership

The appearance of this type of competition should not prompt us to consider, even for a moment, any deemphasis in our effort to continue to be the leaders in the technical aspect of the communications business. But rather the present situation would seem to call upon us to use our analytic abilities and organizational abilities to create an effective approach of providing our customers with the kind of communication they want and need, to furnish it to them when they want it, and at a price that will gain maximum profit for us, consistent with good customer acceptance. This is simply to say that we should concentrate on introducing an effective marketing tool to work in conjunction with our outstanding technical capabilities, to insure for our customers good, complete, modern communications that will meet their every want and need, thereby enabling us to retain our leadership in the communication field and make possible an even greater portion of the fantastic future growth potential in the communications market for our telephone companies.

Sound management dictates that we seek good and sufficient reasons why we should make any change in our habits and practices that have proven successful in the past. I think we are entitled to have such good and sufficient reasons offered before attempting some of the basic changes that will result from the introduction of effective marketing in our companies. As a conclusion of this article, I would like to offer the following basic reasons why

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The Plant Man's NOTEBOOK

By RAY BLAIN, Technical Editorial Director

THE WRITER recently enjoyed a one-day visit to the laboratories of the Development Engineering Corp. at Leesburg, Va., and received a liberal education in modern communications.

This company maintains the largest antenna pattern range turntable facility in private industry. This turntable is mounted on top of the laboratory building. They also maintain ranges of various sizes, impedance ranges, and ground planes for antenna measurements. Complete laboratory facilities and instrumentation are available for research and development of communications systems.

We enjoyed viewing models and hearing the details of the following developments handled by this company:

Design, development, and installation supervision of the U. S. Navy's communications moon relay system (CMR).

Design of the entire radiation system for the U. S. Navy's transmitting facility at Cutler, Me.—an integral part of the Polaris program. This is the largest radio station in the world.

Major participant in the electronic design and development of the world's largest telescope, 1,000-foot ionospheric probe. (Cornell U.—U. S. Air Force—Advanced Research Projects Agency).

Design and installation of the tapering aperture horn antenna (TAHA) for the U. S. Army Signal Corps, one of the world's largest antennas for high frequency communications.

Design and commissioning of superpower broadband curtain antennas for Voice of America international broadcasting outlets.

Design and commissioning of one million-watt radiation system for Voice of America transmitters in the Philippines and Okinawa.

Design of antenna systems for tactical communications for the fighting ships of the U. S. Fleet.

Propagation studies for National Bureau of Standards and other government agencies.

Communications reliability research for U. S. Army Signal Corps.

The latest and perhaps most interesting project is the new Department of Defense ionospheric research facility now being constructed in the mountains near Arecibo, Puerto Rico.

It is certainly a pleasure for this old telephone engineer to rub elbows with these young engineers and to learn about communications systems being planned for the future.

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The Elyria (O.) Telephone Co. has found a good use for old wooden cable reels. They donated them to the Lorain County metropolitan park commissioner who converted them to picnic tables.

Other telephone companies might care to investigate the possibility of doing likewise in their area.

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We are advised by J. V. McBride, vice president and development director of Plastic Wire & Cable Corp., that serious problems have been encountered with aluminum shielding in plastic cable in buried, or underground, duct applications where sheath ruptures permitted earth moisture or drainage water to contact, and seriously corrode the aluminum. Moreover, because of the problems with aluminum shield in "below-grade" applications, IPCEA standards definitely do not recommend the use of aluminum below grade. Further, REA insists on the use of copper shielding.

No, we did not know this, Mac, but thanks for the tip.

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History tells us that more than 15,000 miles of telegraph wire was strung by the Union forces during the Civil War.

By 1863, 1,200 Union telegraph operators were handling an average of over 3,000 messages per day.

Electrical knowledge gained by the telegraphers was later used to explode underwater mines. The Confederates mined the James River, and did a lot of damage to northern ships this way.

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We have had numerous reports of helicopters being used on line construction jobs over rugged terrain. Poles, steel towers and other construction materials have been transported by these whirly birds into areas not accessible by other means of transportation.

There was the problem of transporting wet concrete into a mountain pass in southern California, where a power company was constructing bases for transmission line steel towers. When the helicopters were brought into play, the job was completed in two days. The copter carried as much as 750 pounds of concrete in canvas bags slung underneath the aircraft.

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It is reported that lightning kills about 600 persons and injures 1,500 people each year in the United States. It also causes more than 125 million dollars' worth of fire loss and property damage.

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The Bell Telephone Co. of Canada reports that all installation trucks and passenger cars in its 5,700 vehicle fleet will be replaced by small economy vans and compact automobiles within five years. Further, they will not purchase any large automobiles during 1961 or 1962.

The economy vans will be purchased in lieu of half-ton trucks previously used for installation purposes. The economy van is also invading the cable repair and splicing field.

This company has learned that the small vehicles cost 25 to 30 per cent less in operation and capital outlay.

The heavy construction vehicles will, however, increase in size during the next five years. More and more equipment is being added to these trucks, while the crews who use them are becoming smaller.

Cross Talk

We are cautioned to observe the speed limit, but if we do, we are in danger of having our car rammed from the rear.

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It is claimed that we have become a civilization of dependents in a nation with a tradition of Independence.

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A miser isn't much fun to live with, but he makes a wonderful ancestor.

Courts and Commissions

N. C. Mobile Service Firm Takes Dispute to Commission

The North Carolina Utilities Commission, it was reported on Aug. 14, has received a formal complaint against Southern Bell Telephone & Telegraph Co. from a Raleigh firm which is seeking authority to operate a mobile telephone service.

The John C. Hanner Co. complained that it cannot enter the mobile telephone field until it is permitted to connect its sending and receiving units with Southern Bell facilities.

The Hanner Company also said that Southern Bell, which operates a mobile telephone service of its own, had refused to provide the interconnection until a series of conditions was met.

Under terms set forth in a letter to the Hanner Company, Southern Bell would require the firm to furnish Commission certificate of convenience and necessity, showing that the additional service was needed, and copies of commission-approved rate schedules.

The Hanner firm applied to the commission for a certificate of convenience and necessity at the same time it filed its complaint. It contended, however, that the Southern Bell had no right to withhold service until its demands were met.

The Federal Communications Commission already had given approval for the new mobile radio service.

The Hanner complaint urged the commission to enter an order compelling Southern Bell to make interconnections available immediately.

OK Interim Neb. Rates; Deny Raise for Exchange

The Nebraska Railway Commission on Aug. 2 approved an application of the Eastern Nebraska Telephone Co., Blair, for an interim rate increase effective Sept. 1, and a schedule of rates to become effective with conversions of four exchanges (TELEPHONY, Aug. 5).

Also approved was a loan of $285,000 from the Stromberg-Carlson Credit Corp., a revision of the billing dates and discount amount; and the use of a 4 per cent composite depreciation rate. Proceeds of the loan are to be used for retirement of existing indebtedness and for modernization and improvement of properties and facilities.

Increased interim rates were requested by the Eastern Nebraska company, to cover added costs of wages which will result from the new federal minimum wage law. Interim rates will produce approximately $12,183 of additional gross revenue, and provide estimated net earnings of $10,418.72—a rate of return of 6.3 per cent on a rate base of $165,036.68.

After the dial conversions the net earnings are estimated to be $27,706.37, resulting in a rate of return of 6.88 per cent on the *Pro Forma* rate base of $402,865.

Gross interim monthly rates, subject to 50 cents discount, are shown as follows:

	Walthill	*Osmond*	**Meadow Grove*	*Carroll*	*Rosalie, Winnebago and Winnebago Agency*
One-party business	$6.25	$6.25	$6.00	$5.75	$5.75
Rural business	5.00	5.00	4.75		5.00
One-party residence	4.50	4.50	4.25	4.25	4.00
Two-party residence	3.75	3.75	3.50	3.50	3.50
Four or five-party residence	3.50	3.50	3.25	3.25	3.25
Rural residence	4.00	4.00	3.75		4.00

*Meadow Grove rates listed are for metallic service. Lower rates are provided for grounded service as follows: One-party business, $4.50; One-party residence, $2.50; Two-party residence, $2.25; rural residence, $2.00; rural business, $4.75.

The schedule of dial rates to become effective with the conversion of the following exchanges to dial operation is as follows:

Walthill, Osmond and Meadow Grove:	
One-party business	$6.50
Rural business (includes Macy)	5.25
One-party residence	4.75
Two-party residence	4.00
Four or five-party residence	3.75
Rural residence	4.25
Carroll:	
One-party business	$6.00
One-party residence	4.50
Two-party residence	3.75
Four or five-party residence	3.50

The company now serves 1,801 customers, of whom 1,511 receive service over company-owned facilities; and 290 are service stations. Eastern Nebraska provides dial service at Rosalie, Winnebago, Winnebago Agency and Belden; common battery service at Walthill; and magneto service at Osmond, Meadow Grove and Carroll.

The commission ordered that any desk or wall-type telephones at dial exchanges be replaced with handsets, if desired by customers, and that handset-type telephones be provided at the exchanges to be converted.

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On the same date, the commission denied an application of the Northern Telephone Co., Blair, to increase rates at its Creighton exchange, effective Sept. 1, to cover added wage costs of $2,744 per year occasioned by the new federal minimum wage law (TELEPHONY, Aug. 5).

The evidence of the applicant was based on financial data as of Dec. 31, 1960. The company's rate of return was shown to be 7.01 per cent. The proposed increase would raise this to 7.11 per cent. According to the commission's files, for the 12 months ending May 31, 1961, the company's net income, before interest, was $10,871.77 which produces a rate of return of 8.24 per cent on a net book rate base. Giving effect to increases in rates and expenses, the proposed rates would produce a rate of return of 8.75 per cent, which the commission said was excessive.

Under present rates, and giving effect to proposed increases in expenses, net income before interest would be $8,875.15, resulting in a rate of return of 7.41 per cent.

Approve Raise on Cut-Over For Minnesota Cooperative

The Minnesota Railroad & Warehouse Commission on Aug. 7 approved a rate increase for the Spring Grove Cooperative Telephone Co., Inc., to be

effective on the expected July 1, 1962 date of cut-over of its Spring Grove exchange.

The Spring Grove company is securing an REA loan of $424,000 to rehabilitate its manual telephone plant. Through its manual exchange at Spring Grove, the company serves approximately 395 local stations and 420 rural stations, for a total of 815 company-owned stations.

With its present rates the company showed a loss of $6,865. Approved rates give it a net income of $16,812, and a rate of return of 3.91 per cent on its $429,339 rate base.

Present rates and dial rates approved for cut-over date are as follows:

	Manual Net	*Dial Net*
BUSINESS:		
One-party	$3.00	$7.25
Two-party	2.75	6.50
Rural multi-party.		5.50
RESIDENCE:		
One-party	2.50	4.75
Two-party	2.00	4.00
Four-party	1.75	3.25
Rural multi-party.		3.75

Three Cut Rates in B.C., Yukon on Alcan Highway

Rates on long distance calls to points along the British Columbia and Yukon portions of the Alaska Highway were to be reduced, effective Aug. 1. The reduction was announced following the signing of agreements between British Columbia Telephone Co., Vancouver; Canadian National Railways; and Alberta Government Telephones, Edmonton.

The C. N. R. operates and manages the former Northwest Communication System which had provided long distance service along the Alaska Highway in B. C., and the Yukon generally, since 1946.

A joint statement issued by the three organizations said the existing person-to-person rate will be replaced by person-to-person day and night, and station-to-station day and night rates.

Iowa Company Effects Increase in Rates

The Clear Lake (Ia.) Independent Telephone Co. has announced rate increases effective Aug. 1.

Old and new rates are as follows:

	Old	*New*
Residence		
One-party	$4.50	$5.25
Two-party	3.75	4.25
Four-party	3.25	3.75
Business		
One-party	8.00	9.00
Two-party	7.00	8.00
Rural	3.50	4.00

Earl Ashland is owner and Harold Thompson is manager of the Clear Lake Company.

Uphold Ohio Bell's Right To Provide Internal Systems

The Ohio Public Utilities Commission on Aug. 9 dismissed a complaint of the Mid-America Telephone Co. against the Ohio Bell Telephone Co., in which the Mid-America company had asked that Ohio Bell be compelled to withdraw its tariffs for "private system service" and discontinue offering such service.

The Commission stated that "private system service" is defined in Ohio Bell's general tariff as: "Arrangements of equipment not connected for exchange or toll service, consisting of switching equipment (manual or dial) with stations connected thereto, and providing for telephone intercommunication between the stations."

The Commission ruled against Mid-America's contention that this "private systems" service is not public utility service and is not subject to the jurisdiction of the commission, stating that it "is offered to the public without discrimination, subject to regulation." The commission continued:

"Inasmuch as 'private-systems' service constitutes communication service, that such type of communication service can be rendered effectively by a telephone utility by virtue of the interrelation with the type of public utility services rendered by such utility, that such services are offered through (Ohio Bell's) filed tariff to the public without discrimination, that the public can demand this service as a matter of right by virtue of the tariff filed, and that competitive business is not precluded from rendering the same or comparable services free of regulation, it is in the interest of the subscribing public that Ohio Bell continue to render such services . . ."

Mid-America had cited a federal consent judgment and decree entered in *United States vs. Western Electric Co. et al.*, Civil Action 17.49, Jan. 24, 1956, which it claimed prohibits Ohio Bell from furnishing "private systems" service.

The commission said that this decree does enjoin the American Telephone & Telegraph Co. from engaging in any business "other than the furnishing of common carrier communication services . . ." However, these services are defined to include any communication services or facilities the charges for which are "subject to regulation . . ."

Penalty Befitting Crime

From *Punch*, British humor magazine, comes a serio-comic commentary on the recent bombing of communication towers in the United States, a slant which American telephone management will doubtless appreciate.

In the June 28 issue, page 960, the editor writes:

"If I have it right, the cause that has inspired the members of the American Republican Army—both of them—to armed revolt against the United States government is that they are 'against privately-owned American utilities companies.'

"They have advanced this cause so far by blowing up three communication towers. . . . I can only suggest that the most suitable punishment for them is to spend a month in England, travelling on the railways, dialling 100 at night, trying to buy and to burn coal, and so on.

"After a little experience of publicly-owned utilities, I believe they will volunteer to rebuild the communication towers with their own hands."

Ark. Independent Asks Raise After Wage-Hour Enactment

The Western Arkansas Telephone Co., Russellville, has asked the Arkansas Public Service Commission for a general rate increase, according to a company announcement which did not state the amount of raise requested.

R. A. Lane, president, said the rate petition is designed to enable the company to comply with the new wage and hour law bill recently enacted. Since Western Arkansas must raise the minimum wage on Sept. 3 from a dollar to $1.15 per hour, and add an additional ten cents an hour in 1963, the company feels that the increase is necessary.

The company has 147 employes who will be affected by the new law, and has not had an increase since 1957, the date of the last wage-hour raise. All exchanges are dial-operated, and Mr. Lane said that the company has spent over 5 million dollars on modernization of its exchanges in Russellville, Clarksville, Booneville, Atkins, Dover, Dardanelle, Hector, London, Paris, and Pottsville.

OK Pay TV Tariffs Filed By SW Bell in Arkansas

The Arkansas Public Service Commission on July 28 accepted tariffs filed by Southwestern Bell Telephone Co. covering transmission facilities for pay television in Little Rock (TELEPHONY, July 29).

This was in connection with the commission's order directing Southwest-

ern Bell to provide facilities for Midwest Video Corp., which had requested that the company furnish these lines.

Midwest was ordered to guarantee financial security for the cost of the lines.

Bell, Ontario Town Dispute Cable-Laying Permit

A dispute between the Bell Telephone Co. of Canada and the town of Dryden, in northwestern Ontario, is due for an airing.

Canada's Board of Transport Commissioners will hear a Bell plea to put a cable from its existing service area around Dryden to a proposed new exchange within the town's municipal boundary.

Inside the town limits, service is supplied by the Dryden Municipal Telephone System. The town, supported by the Independent company operators, is opposing the Bell cable. Dryden is willing, however, to supply the required cable to Bell on rental.

Toll and long-distance calls are now handled on circuits provided by Bell, and are passed to the municipal area through an agreement with the Northern Telephone Co., Ltd., New Liskeard.

The Canadian Independent Telephone Association says that allowing Bell to put its own cable into the town may have far-reaching effects on the Independent telephone industry in Ontario and Quebec.

It is felt that it would mean Bell could have the right to put cables into a town against the objections of the municipality.

At the moment, the Bell company has the right, under the Railway Act, to put a cable into a town, if the town grants permission.

Bell spokesmen say that leasing a cable from the town would be awkward. It would not allow Bell to keep abreast of rapidly-developing advances in communications that require modifications to be made in cables from time to time.

Bell also points out that its proposed new exchange and link-up is part of a multi-million-dollar program to provide better service to northwestern Ontario.

A permit to construct a new telephone exchange in the town has already been granted, but work has been delayed because of the cable dispute.

OK $139,000 Raise for General of SE in Virginia

The Virginia Corporation Commission on July 31 approved a $139,000 rate increase for the General Telephone Co. of the Southeast, Durham, N. C., effective Aug. 1 (TELEPHONY, July 1).

E. T. McCormick of American Stock Exchange (left) assists W. B. Harrison, president of Independent Telephone Corp., Dryden, N. Y., in reporting company's first transaction over market's ticket net. Trade began Aug. 8 of its 728,507 shares. Fourteen subsidiaries serve N. Y., N. J., W. Va., Mo., Mich., and Fla.

The company had originally requested an increase in rates amounting to $177,234.

Thirteen Virginia exchanges are served by General of the Southeast.

In seven years the company has increased the number of its Virginia telephones from 6,077 to 11,578.

General of SW Gets Raises At 1 Okla., 10 Tex. Exchanges

The following rate increases became effective in Texas and Oklahoma exchanges of General Telephone Co. of the Southwest during July, 1961:

	Old	New
Anton, Tex.; dial; 444 stations; July 1.		
Business		
One-party	$ 9.75	$10.50
Two-party	7.75	8.50
Residence		
One-party	5.00	5.50
Two-party	4.50	5.00
Four-party	4.00	4.50
Barnsdall, Okla.; conversion to dial; 729 stations, July 16.		
Business		
One-party	5.80	7.60
Residence		
One-party	3.30	4.35
Two-party	2.80	3.85
East Bernard, Tex.; dial; 310 stations; July 1.		
Business		
One-party	9.00	9.50
Two-party	7.50	8.00
Residence		
One-party	4.75	5.25
Two-party	4.00	4.25
Estelline, Tex.; dial—EAS; 127 stations; July 1.		
Business		
One-party	8.50	12.75
Two-party	7.00	10.75
Residence		
One-party	4.50	6.00
Two-party	3.75	5.00
Frost, Tex.; Dial; 204 stations; July 6.		
Business		
One-party	9.50	10.75
Two-party	8.00	9.25
Residence		
One-party	5.25	6.00
Two-party	4.25	5.00
Four-party	3.50	4.25
Gordonville, Tex.; Dial—EAS; 134 stations; July 1.		
Business		
One-party	8.50	9.50
Residence		
One-party	4.75	5.00
Two-party	4.25	4.50
Four-party	3.50	3.75
Haskell, Tex.; Dial; 1,581 stations; July 11.		
Business		
One-party	10.50	11.50
Two-party	8.50	9.50
Residence		
One-party	5.50	6.25
Two-party	4.50	5.00
Lakeview, Tex.; dial—EAS; 107 stations; July 1.		
Business		
One-party	6.50	12.75
Two-party	4.50	10.75
Residence		
One-party	3.50	6.00
Two-party	3.00	5.00
Memphis, Tex.; dial—EAS; 327 stations; July 1.		
Business		
One-party	12.00	12.75
Two-party	10.00	10.75
Residence		
One-party	6.00	6.00
Two-party	5.00	5.00
Four-party	4.25	4.25
Turkey, Tex.; dial; 311 stations; July 6.		
Business		
One-party	9.00	10.00
Two-party	7.25	8.00
Residence		
One-party	4.75	5.50
Two-party	4.00	4.50
Four-party	3.50	4.00
Wallis, Tex.; dial; 253 stations; July 6.		
Business		
One-party	10.00	10.50
Two-party	8.50	9.00
Residence		
One-party	5.25	5.75
Two-party	4.25	4.50
Four-party	3.50	3.75

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EXPANDABLE COIL CASE

with 88 mh or 44 mh LOADING COILS

LOADING COIL ELECTRICAL PROPERTIES

Type of Coil	CHARACTERISTICS							
	Nominal Inductance (MH)	Inductance Unbalance (%) Maximum	D.C. Resistance (Ohms) Maximum	D.C. Resistance Unbalance (Ohms) Maximum	Effective Resistance (Ohms) Maximum	Dielectric Strength Between Winding (D.C. Volts) Minimum	Insulation Resistance (Megohms) Minimum	Cross Talk Loss Between Adjacent Coils (Decibles)
613-344	44	.5	5.4	.2	7.1	10,000	10,000	90 or Greater
614-343	88	.5	9.0	.2	11.0	10,000	10,000	90 or Greater

COOK ELECTRIC Company

Since 1897

2700 SOUTHPORT AVENUE CHICAGO 14, ILLINOIS

4th USITA Management Course Conducted at U. of Kan.

Thirty-six participants representing 29 Independent telephone companies, and one from New York Telephone Co. (Bell) attended the 1961 USITA-sponsored Management Development course conducted at the University of Kansas, Lawrence, July 16 through Aug. 11.

The USITA program of executive development, now in its fourth year, deals with three areas:

(1) Functions of Administration.
(2) American Business Climate.
(3) Rate Regulation.

Study is particularly concentrated on the four fields of Control and Financial Administration; Human Relations in Business; Merchandising; and Administrative Policy and Planning.

The case method of instruction is followed in the classes. This is the method by which each executive student takes an actual business problem situation, analyzes it, forms his own plan for handling it, and then compares his solution with those of other class members.

Administrative responsibilities for the program at the university reside in Dr. James R. Surface, director, and dean of the School of Business; and Roger L. Singleton, assistant director, and instructor in the Secretarial Department of the School of Business.

The faculty was composed of Philip B. Hartley, assistant professor of business administration; Thomas E. Miller, associate professor of business administration and human relations; Ronald R. Olsen, assistant professor of economics; and Bertram L. Trillich Jr., assistant professor of marketing in the School of Business, all four of the University of Kansas; and A. J. G. Priest, professor of Law, at the University of Virginia, and past chairman of the Section on Public Utility Law of the American Bar Association.

These members of the USITA personnel committee collaborated in planning the four-week course: R. J. Fegan, chairman, of Junction City, Kan.; Ralph O. Beck Jr. of Honolulu, Hawaii; Kenneth L. Dally of Lincoln, Neb.; J. K. Galloway of Winter Park, Fla.; Adam J. Schwartz of Rochester, N. Y.; and Bert L. Steele of New York, N. Y.

Graduation ceremonies for the 1961 class were held on Aug. 11, with Mr. Dally, personnel committee sub-chairman, as the principal speaker.

Discussing "America's Greatest Relatively Undeveloped Resource," Mr. Dally said he referred to our ability to think. He stated there are many who have the capacity, the opportunity and the responsibility to improve this situation, and he added:

"If all of the time consumed in complaining, in criticizing and in loose talk, by people who are capable of contributing to the improvement of the situations referred to, could be converted to productive use, this world would be much better off and the importance and happiness of the individuals involved would be substantially increased."

Mr. Dally illustrated his point with an example in which an executive-and-engineer team were unable to surmount a fairly simple equipment design problem due to their failure to "think the problem through."

Mr. Dally remarked that one factor contributing to the thinking blind-spot is the lack of thinking done in the home. He continued:

"Everyone, consciously or unconsciously, is anxious that his importance be recognized, and yet many of us are failing, day after day, to do the very things that would give us importance.

"How do we gain importance, except through our making contributions to our families, to our companies, and to our fellow men generally, which are at least as great as the benefit we receive from them. And how do we make any real contributions, except through the intelligent, productive expenditure of mental and physical efforts, which means work.

"Somehow we must stop, and help our associates stop, underestimating the importance of our work, whatever it is, and give greater recognition to the facts—that through our work, we make contributions which help to justify our existence and give us, our families, and our companies the importance, the security and the happiness we all seek.

"When our committee, Dean Surface and his associates set up the USITA Management Development Program, our primary objective was not to make yours and your companies' work easier, but instead to make your accomplishments and your importance greater."

COVER PHOTO

Participants and faculty of 1961 USITA Management Development program pictured on front cover are the following:

First row: Howard R. Woodburn of Hood River, Ore.; Winfred R. Cornelius of Brownwood, Tex.; Ronald R. Olsen, U. of K.; Francis Medeiros of Honolulu, Hawaii; W. Carl Allen of Rantoul, Ill.; Robert A. Fields of Fort Walton Beach, Fla.; John Herdt Jr. of Kansas City, Mo.; Howard M. Keen of Lakeland, Fla.; and John G. Siemons of Harrisburg, Pa.

Second row: Richard Stearnes of Marion, O.; Robert Townsend of Hickory, N. C.; Bertram L. Trillich, U. of K.; Donald W. Pearson of Rochester, N. Y.; Don L. Schumacher of Madison, Wis.; Fred E. Cunningham of Johnstown, Pa.; John A. Quincy of Albany, N. Y.; George Sturtz of Marion, O.; Thomas E. Miller, U. of K.; Robert E. Ward of Santa Monica, Calif.; David Anderson of Black River Falls, Wis.; and Charles Baugh of Lexington, Ky.

Third row: Frederic Hacquebord of Monrovia, Calif.; Baxter H. Case of Elyria, O.; Floyd McKeighen of Monrovia, Calif.; Edward C. Garnett Jr. of Lexington, Va.; Harvey J. Haskell of La Crosse, Wis.; Joseph A. Hill of Rochester, N. Y.; J. B. Swink of Corsicana, Tex.; Russell P. Hulbert of Winter Park, Fla.; Theodore Wozny of Columbia, Mo.; Harold P. Mishler of Erie, Pa.; and Charles Eskrich of Park Ridge, Ill.

Fourth row: William P. Esslinger of Brownwood, Tex.; Francis W. Vinall of Everett, Wash.; Gerald Richwine of Fort Wayne, Ind.; Richard A. Lamer of Bloomington, Ill.; William F. Walker of Butler, Pa.; Robert Beswick of Geneva, O.; Robert Lamberton of Santa Barbara, Calif.; Joe Collyns of San Angelo, Tex.; and Philip B. Hartley, U. of K.

Not pictured: James R. Surface, director of Management Development program, and Dean, School of Business, U. of K.; Roger L. Singleton, assistant director, U. of K.; and A. J. G. Priest, professor of Law, University of Virginia.

Diner Calls Kitchen In New Restaurant System

A diner-to-kitchen telephone system has been demonstrated at the National Restaurant Association's national convention by E. J. Myerson of Washington, D. C.

Using this system, the diner picks up a telephone, dials the kitchen, and orders his meal. The waiter doesn't come on the scene until the order is served.

Mr. Myerson says this system will enable a restaurant to serve twice as many customers with a third less help.

He says he expects to install a number of these units throughout the nation.

all you need is a cable, a clamp and a pole

Anaconda Figure-8 Telephone Cable eliminates separate messenger and spinning

You save time at every pole with Anaconda Figure-8 cable, because both messenger and cable are combined under one common Figure-8-shaped jacket that is easily installed into tight-gripping cable clamps. There is no field spinning, no separate messenger reel.

And when you dead end Figure-8 at a pole, there is no end curl or twisting because Anaconda's exclusive "dead" strand is pre-formed to stay put. In fact, "dead" strand eliminates twisting altogether even when you lay cable by the road.

Figure-8 cable is long-lasting. It resists abrasion, scraping, flexing — moisture, heat, and cold. An Anaconda-developed sealing compound prevents moisture migration and corrosion.

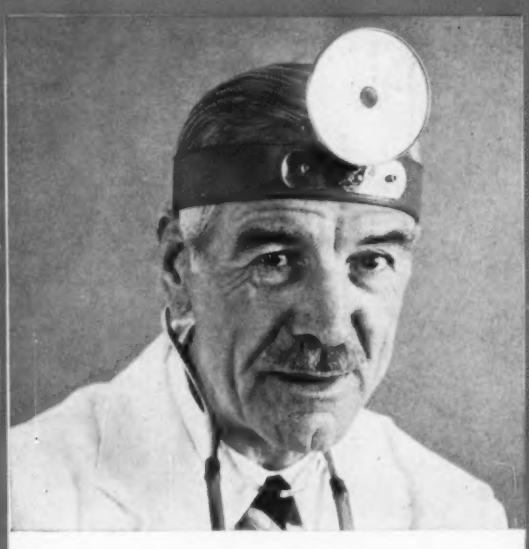
Anaconda makes Figure-8 Telephone Cable with standard color-coded Alpeth or Cupeth constructions, with longitudinal corrugated shields on all sizes for flexibility. Average mutual capacitance is 0.083 mf/mile.

Find out more about Anaconda Figure-8 Telephone Cable. Contact your local Anaconda representative or write to Anaconda Wire and Cable Company, 25 Broadway, New York 4, New York, Department EFL-1-T. 61331

PHONE THE MAN FROM
ANACONDA®
FOR FIGURE-8 TELEPHONE CABLE

THE INDEPENDENT MANUFACTURER FOR THE INDEPENDENT TELEPHONE INDUSTRY

Different people want different phones



TYPE 87 PHONE
For the small office. Three lines with hold feature on each line. Lighted button indicates incoming call. Signal button may be used for secretarial buzzing. Extension exclusion is optional. 10 colors.

AE makes a phone for every customer need

SPACE-MAKER* PHONE
Practical extension fits anywhere in the home. The dial tilts up to 45 degrees and rotates 360 degrees. Hookswitch swings from side to side in 180-degree arc. Choice of 10 colors.

Each person in your area has specific telephone needs. For his small office, this doctor needs a low cost, multi-line phone. But for his daughter's room, he wants a practical, space-saving extension.

To meet the needs of different customers, you must provide many types of phones—standard *and* special. Why? Because it's profitable! The customer who wants a special phone pays extra for the extra service.

Any new customers in your area? Any old ones with new telephone needs? If so, show them the AE phone best suited to their particular needs. Contact your AE representative. He'll be glad to give you full details on our complete line of telephone services and related instruments. Only AE offers 15 different phones to meet different customer needs.

AUTOMATIC ELECTRIC

Subsidiary of
GENERAL TELEPHONE & ELECTRONICS

GENERAL SYSTEM

*SPACE-MAKER is a registered trademark of Automatic Electric Company

Announce Highlights of REA Fiscal 1961 Activities

Highlights of the Rural Electrification Administration's 1961 fiscal year were described on Aug. 11 by the U. S. Department of Agriculture. Electric and telephone loans made in that period involved service to 1.4 million people.

Telephone loans aided in furnishing new or improved service, all dial, for 241,245 subscribers, or approximately 965,000 people.

Electric loans approved by REA were planned to aid the borrowers in providing central station electric service to 116,859 new consumers, or approximately 467,000 men, women, and children, assuming that each meter serves four persons.

In the 12-year-old REA telephone program, 56 new borrowers were added during the year. They increased the number of telephone systems financed by REA to 753. Of these, 543 are commercial companies and 210 are cooperatives. REA made 266 telephone loans during the year. They amounted to 142.8 million dollars, a new high. In 1960, these loans totaled 105 million dollars.

Including the 241,245 subscribers provided for in the 1961 loans, this program will reach 1.6 million subscribers, or more than 6 million people, REA stated. The REA-financed rural telephone systems are located in 45 states and the Virgin Islands.

Of the 274½ million dollars in 255 electric loans, 151.9 million dollars, or 55.3 per cent, was approved for generation and transmission purposes. In the previous fiscal year when loans amounted to 220 million dollars, 40.4 per cent was approved for generation and transmission facilities.

Generating capacity of 443,286 kilowatts was authorized by the 1961 loans, and the total energy production capacity of the REA-financed systems provided by loans rose to 2.9 million kw. At the close of the fiscal year, the installed generating capacity financed by REA was approximately 1 per cent of the electric industry's total capacity, according to REA.

During the year, the REA borrowers, electric and telephone, made principal and interest payments of $172,882,124. Electric borrowers now have made payments to the federal government totaling $1,450,407,568. This includes $801,166,417 repaid on principal; $474,846,764 paid on interest; and $169,394,387 paid ahead of due dates.

Payments by telephone borrowers amount to $55,405,925, including $25,628,000 repaid on principal; $24,735,395 paid on interest; and $5,042,530 ahead of schedule.

Standing are members of the Illinois Commerce Commission staff who participated in four district meetings sponsored by the Illinois Telephone Association. They are, left to right: John Kissel, telephone engineer; Al Ulrich, commission engineer; R. B. Thomas, chief engineer; Art Thorsell, service engineer, and Harry Lehman, supervising accountant. Directors of the association who attended the meeting at Dixon are (seated, l. to r.): F. S. Coakley, general manager, Dixon Home Telephone Co.; Daniel A. Schaefer, president, DeKalb-Ogle Telephone Co., Sycamore, and association president; K. L. Schroeder, vice president, Northwestern Telephone Co., Freeport, and Donald F. Anderson, manager, Geneseo Telephone Co.

Ill. Association, Commission Hold Four Joint Meetings

Staff members of the Illinois Commerce Commission participated in a series of four one-day district meetings held by the Illinois Telephone Association during July.

The meetings were held at Dixon, Mattoon, Mt. Vernon and Peoria.

During the morning session, each commission staff member made a presentation relative to his specific commission responsibilities and related how the operating company's activities tied in with his particular department.

In the afternoon, the group was divided into small groups, and each commission staff member conducted an informal question-and-answer session with a round-table format.

Report Three More US-Canada EAS Arrangements

J. T. Reid, publications supervisor of the New Brunswick Telephone Co., Ltd., St. John, has brought to our attention several other instances of Canada-United States extended area service, besides that reported in our July 1 issue. Our article mentioned the toll-free service between Rainy River, Ontario, and Baudette, Minn.

Mr. Reid pointed out that over-the-border EAS has been in existence

(1) Since June 25, 1955 between St. Leonard's, N. B., and Van Buren, Me.

(2) Since Nov. 18, 1956 between Edmundston, N. B. and Madawaska, Me.

He also reported that in December 1962, EAS will be established between St. Stephen, N. B. and Calais, Me.

He said that these communities are all located immediately adjacent to the border with only the width of a river separating them.

Haught, Frey Named to PT&T Vice President Posts

Pacific Telephone & Telegraph Co. on Aug. 1 announced the appointment of Harold B. Haught as vice president-staff and named Richard C. Frey to succeed him as vice president-engineering.

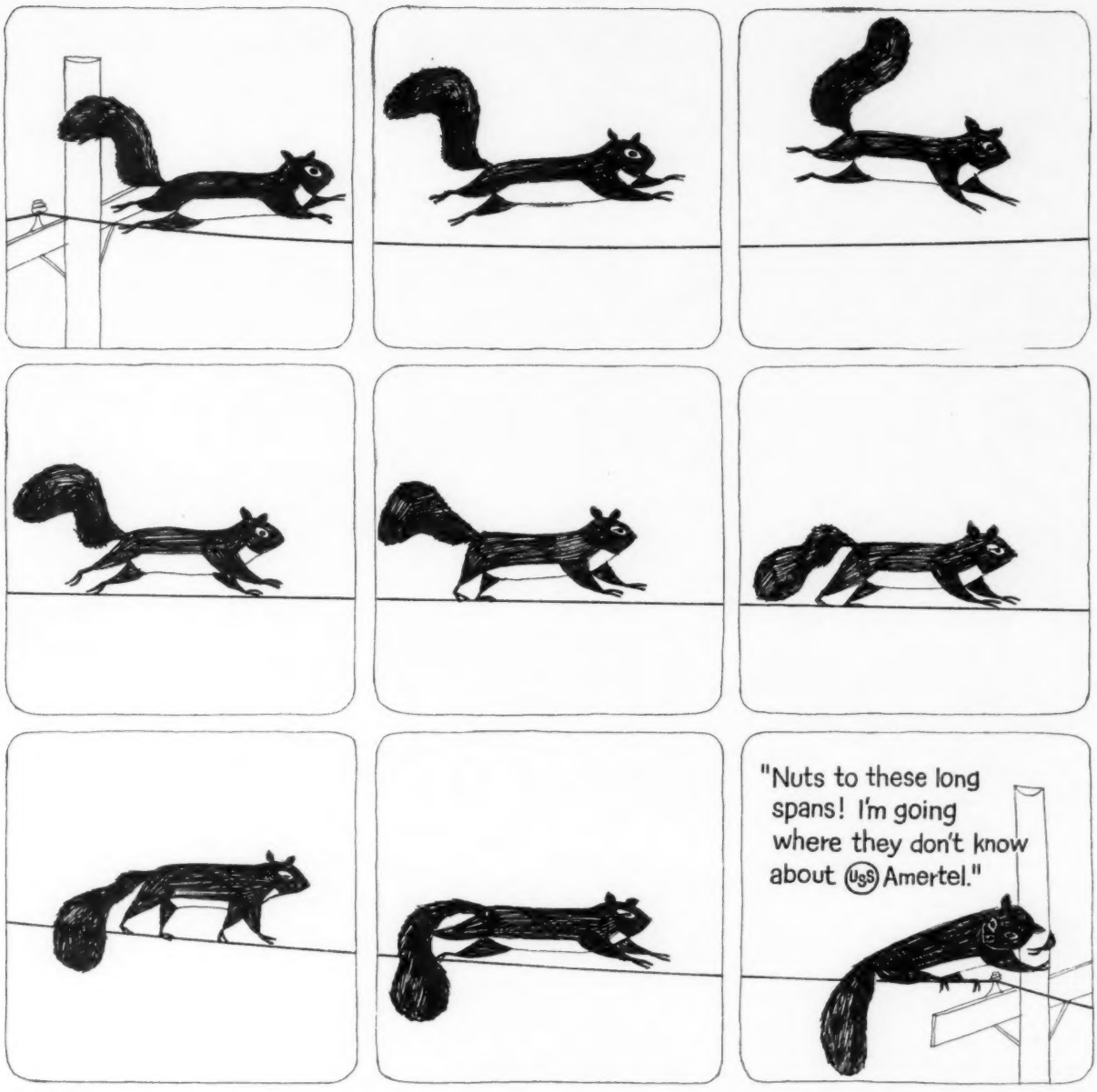
Mr. Haught succeeds Guy P. Wallick who will retire Sept. 30.

Haught had been engineering vice president since November, 1960. Prior to that, he had been an assistant vice president.

Mr. Frey was formerly general plant manager in the San Francisco bay area.

Many Ask Over Telephone

The Library of Congress *Information Bulletin*, issued July 17, 1961, reveals that inquiries made to the Library's reference department stood at a record level during the fiscal year of 1961. Inquiries made in person totaled 114,601; those by telephone, 14,114.



SORRY, old fellow, but it's just good business to use the very best wire on rural telephone lines . . . and that's USS Tiger Brand Amertel. Its higher strength means fewer poles, less materials, faster installation, and lower costs. In a heavy loading area you can span up to 200 feet with Amertel 85, 350 feet with Amertel 135, and 600 feet with Amertel 195. Grade for grade, Amertel's voice transmission efficiency is the highest. The physical and electrical characteristics of Amertel 195 give it a transmission efficiency higher than any other galvanized steel telephone wire. Where icing is a problem the greater strength of USS Amertel protects against failure. Amertel will stretch under an ice load but will return to almost its original sag after thawing. The heavy zinc coating on USS Amertel gives greater corrosion resistance and lowers maintenance costs. For your next job, check the advantages of using USS Tiger Brand Amertel. Write American Steel and Wire, Dept. 1224, Rockefeller Building, Cleveland 13, Ohio.

USS, Tiger Brand and Amertel are registered trademarks.

American Steel and Wire Division of United States Steel

Columbia-Geneva Steel Division, San Francisco, Pacific Coast Distributors
Tennessee Coal and Iron Division, Fairfield, Ala., Southern Distributors
United States Steel Export Company, Distributors Abroad

News on New Products

EDITORS NOTE: *Data on the products described below were received after Mr. Blain's article on new developments, appearing in this issue, was prepared.*

GENERAL SERVICE BODY — The model HSB general service utility body produced by the Utility Division of Highway Trailer Industries, was designed for utility, municipal and airline service, contractors, TV repair, and other service usage, the manufacturer states.

The HSB90 body dimensions are:

Ninety inches long, 77½ inches wide, 42 inches over-all height, 29 inches from floor to top.

Depth of side boxes is 14½ inches and inside floor space is 90 inches x 48½ inches.

The floor is made from 14-gauge tread plate steel, is anchored to four formed cross-bearers of 10-gauge steel, and is further reinforced with longitudinal support members of 16-gauge steel.

Highway's general-purpose body comes equipped with a hinged tail gate with chain and hooks for positioning and locking. Sliding-type roof and ladder racks are optional.

The model HSB body is available in three unit sizes: the ½-ton model, 78 inches long; the ¾-ton model, 90 inches long; and the 1-ton model, 104 inches long. Request NP1688.

•

HEAVY-DUTY DIGGER—Also available from Highway Trailer Industries is a heavy-duty earth-boring machine, for industry-wide multiple application. It is designed to swing augers from 9 inches to 96 inches—to a depth of 30 feet in all types of soil, and provides variable speeds in feed and retraction with down pressure up to 20,000 pounds, the company says.

This digger attains a 42-foot sheave by means of a 3-stage hydraulic telescoping derrick with a 7,500-pound capacity.

Hydraulic leveling allows 45-degree lateral for anchor holes and 25 degrees under the vehicle. The hydraulically

actuated clutch is said to transmit up to 200 H.P. while allowing the operator to "feel" the clutch action as with manual controls.

An additional feature of the Highway digger is the hydraulic feed ram encased in a 4½-inch square Kelly bar, which is enclosed at the auger end, and, the company states, insures both the hydraulic system and gear case against any possible entry of foreign matter.

Highway Trailer also says that its HFMS skid-mounted digger can be mounted on either the spotter base or the swing base. Request NP1689.

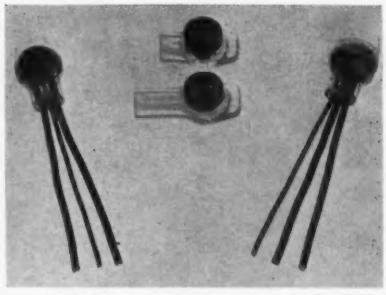
•

COMPACT COMMUNICATIONS CONNECTOR — The "Scotchlok" brand, Type UR self-stripping electrical connector for communication cable splicing has been shortened in length to save space in cable terminals and splice enclosures, according to an announcement from Minnesota Mining & Mfg. Co. (3M).

A maximum saving in space of 25 per cent is possible, the company states, with the new version, which has been reduced from 1-inch in over-all length to ¾-inch.

In addition, the revised UR connector has larger wire entry ports for easier insertion of #19 wire, 3M says.

It also reported that none of the other physical or electrical characteristics of the self-stripping, self-sealing pre-insulated connector has been changed. The UR, developed for the



New shorter model of the Type UR electrical connector shown with the original UR.

telephone, communications and signaling industries, was introduced in June, 1960. The connector splices, insulates and moisture-seals splices in #19 to #26 AWG solid or #20 to #26 AWG stranded wire in two steps. Request NP-1690.

TELEPHONY PUBLISHING CORP.
608 S. Dearborn St.
Chicago 5, Ill.

Please have the manufacturer send me without obligation the literature indicated by the following numbers:

NP1688_____; NP1689_____; NP1690_____; NP1691_____;
NP1692_____; NP1693_____; NP1694_____; NP1695_____;
NP1696_____; NP1697_____; NP1698_____; NP1699_____;
NP1700_____; NP1701_____; NP1702_____; NP1703_____;
NP1704_____; NP1705_____.

Name.....

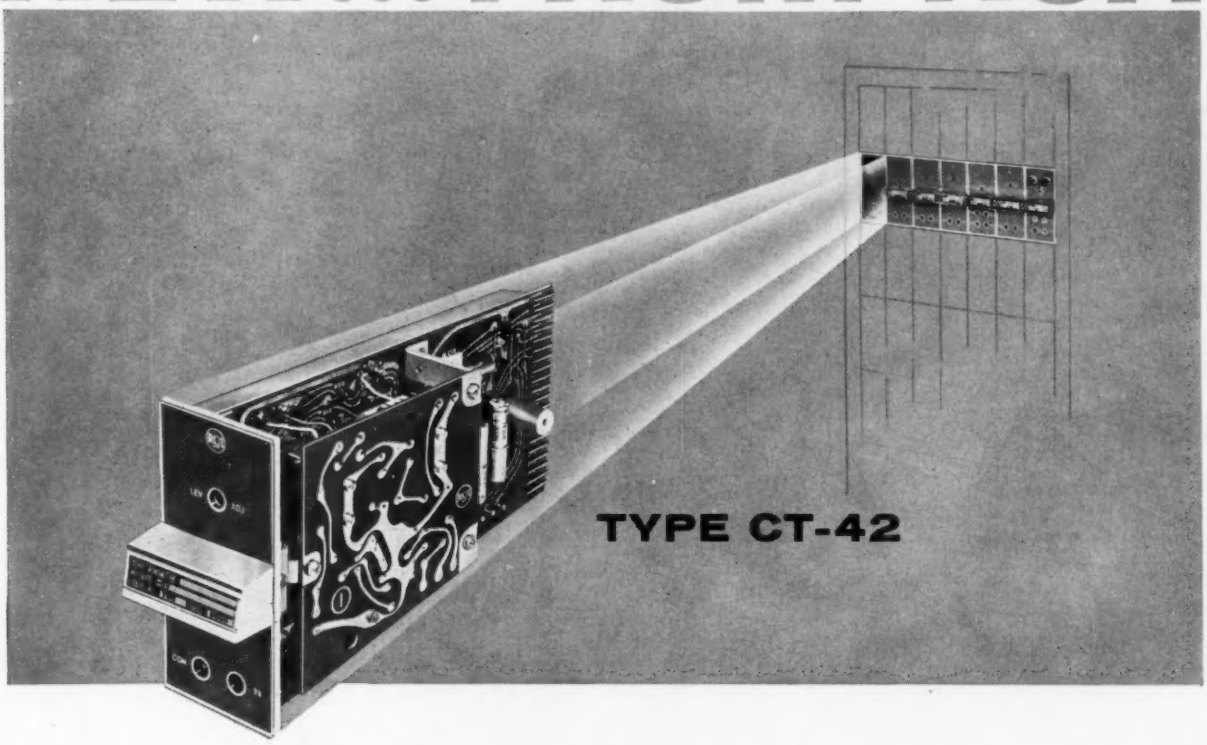
Company.....

Street.....

Town and State.....

8/19/61

NEW... FROM RCA



SOLID STATE TONE MULTIPLEX

FOR WIRELINE, MICROWAVE OR CARRIER

24 channels from 420 to 3180 cps—Spaced every 120 cycles (CCITT Standards)
18 channels from 4300 to 7600 cps—Spaced 170 to 220 cycles

The CT-42 is an all new tone multiplex of high performance designed to operate over a wide environmental range. Ruggedly built, it uses computer grade components for lasting dependability.

Each channel can be frequency-shift or AM keyed for teletype, telemetering, control or data signals. Six transmitters or receivers in any combination may be plugged into a standard shelf which also contains a husky regulated power supply.

Channel units operate from 24 V DC or 117 V AC power supply.

If you are looking for the newest and best in tone multiplex equipment, mail the convenient coupon for complete specifications and prices.

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RADIO CORPORATION OF AMERICA

RADIO CORPORATION OF AMERICA
Microwave Equipment, Dept. YC-189
Building 15-5, Camden 2, N.J.

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NAME_____ TITLE_____

COMPANY_____

ADDRESS_____

CITY_____ ZONE_____ STATE_____

TWO-FREQUENCY TWO-WAY RADIO—General Electric's Communication Products Department has announced a new mobile two-way radio described as the first transistorized unit to provide dual frequency listening through a common receiver, minimizing extra battery drain.

The unit may be used by telephone companies and other businesses where there is a need to listen to two separate intra-company dispatching systems utilizing different frequencies.

The new simultaneous monitoring equipment is said to permit two-frequency reception at much less cost and current drain than two separate receivers used to accomplish the same purpose. It eliminates the requirement for a total second receiver consuming more battery power.

The new transmitter-receiver contains the "front-end" portion only of the second receiver. The RF amplifier and oscillator output of the second receiver is connected to the first receiver's high IF amplifier input.

An extra power supply is not used. Two-frequency operation is obtained in a single case.

Use of the "dual front-end" concept in transistorized mobile radio equipment is reported to meet the needs of municipal systems whose operators require only one transmitter for their own messages, but who want to listen to sheriff's frequencies or a state frequency, too. It also will help different agencies in a city to listen to other city frequencies, if desired, so emergency work can be coordinated more efficiently.

Added to the General Electric transistorized progress line, the equipment is designed to transmit on the FCC-assigned frequency or frequencies in high band, 130-174 mc., or low band, 25-50 mc. It can monitor two frequencies, G-E says, regardless of spacing in low-band or high-band, or can monitor "cross-band," listening to a high-band channel and a low-band channel.

Both dash-mount and trunk units are available. Extra frequency monitoring also is provided in non-transistorized equipment where the purchasers of tubed two-way radios want dual-frequency operation. Request NP1691.

PORTABLE TWO-WAY RADIO—A transistorized personal portable two-way radio is described by General Electric Co. as the smallest, lightest, most compact VHF-FM man-carried communications unit G-E has yet marketed, with the transmitter and receiver in a single case.

Kent J. Worthen, national mobile radio sales manager for G-E's Communication Products Department, said this personal communication unit is designed for high-band frequencies (132-174 mc.) with one-watt transmitter RF power output. It is the highest power output in the industry, for a small-case unit, Mr. Worthen said.

Called the "Voice Commander," the new equipment is 9.5 inches high, 5.3 inches wide and 1.7 inches deep. It weighs slightly more than 4 pounds.

Advantages of this two-way transis-

torized radio are pointed out by the manufacturer as follows:

(1) *Size Reduction.* This radio is for applications where lightweight, man-carried equipment is needed, as in businesses, military operations, police and fire departments, forest ranger services, and others. G-E explains that the "Voice Commander" can be used in field work to converse with other "Voice Commander" units, with users of two-way radio sets in cars, or to direct the operations of individuals using pocket radio receivers.

(2) *Comfort wearing needs met.* The single-case transmitter and receiver were designed for field personnel who move around, and find larger, heavier units cumbersome, but who want range and distance.

(3) *Voice Commander is self-contained.* With a built-in microphone and speaker, the two-section slide-open plastic case, with handle performs a dual purpose as a carrying piece and as an auxiliary antenna for the receiver. The unit also has a built-in collapsible telescopic antenna which is extended for transmission and for improved receiver performance.

(4) *A large, well-baffled speaker.* The "Voice Commander" is driven with 300 milliwatts of audio power, providing, as G-E puts it, "big unit audio in small-case design." Optional extras include an external earpiece or lapel speaker; and also a tiny external microphone, for users who desire to keep the unit on their belts, without removing it from a leather carrying container. Request NP1692.

•

RUBBER LINEMAN'S DIAL TEST SET—The Bohnsack Equipment Co. has introduced the new BECO #1011

rubber lineman's dial test set. This item is now in full production.

The test set is described as having a rubber handset, standard W.E. dial, late U-1 receiver unit and F-1 transmitter, nylon cord, powerful test clips and belt snap.

Bohnsack says the unit is designed to take abuse and is so insulated as to prevent shocks even on damp days. All parts are standard. Request NP1693.

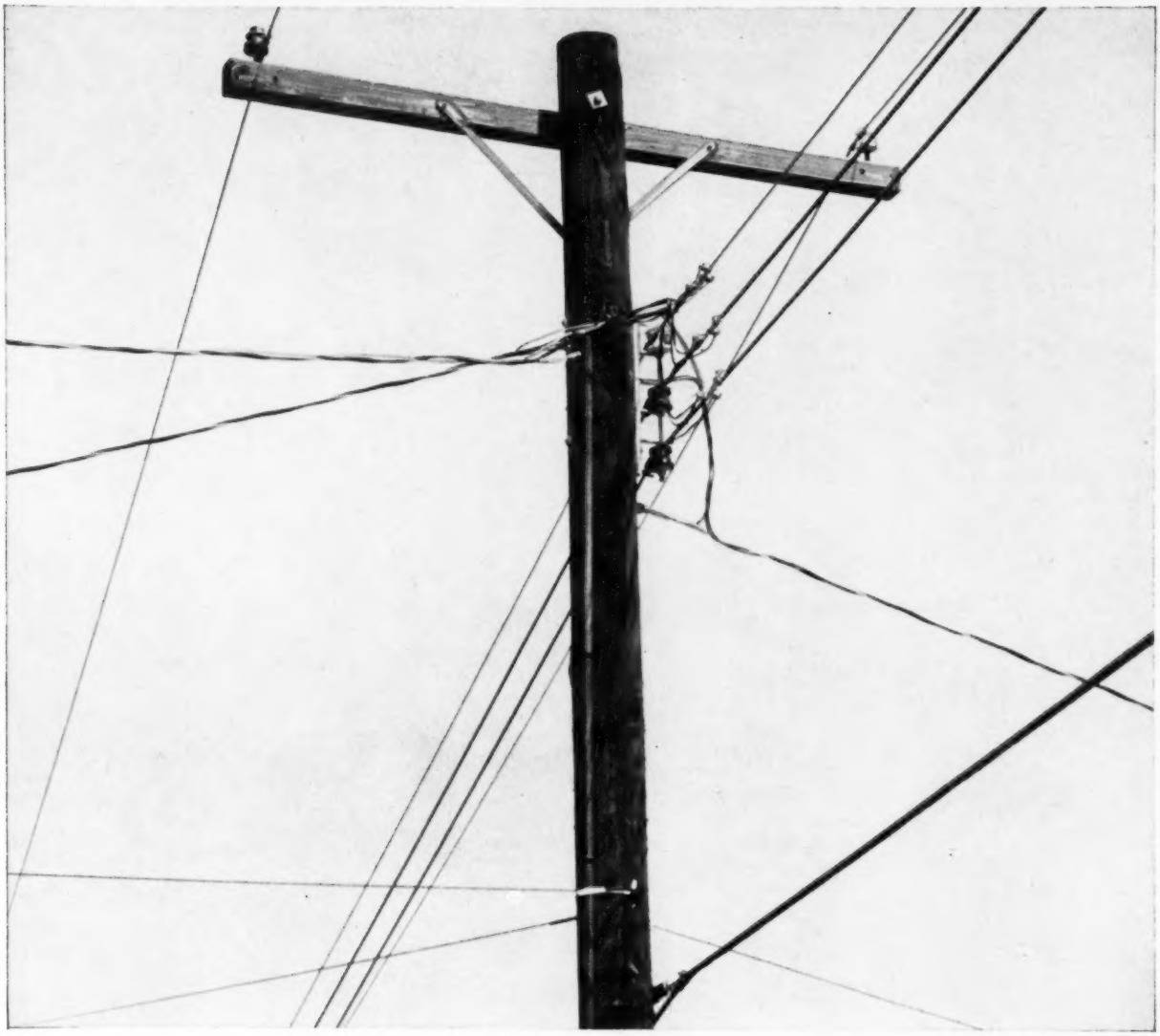
•

INSULATION COATINGS—Development of a polyethylene resin which can be extruded to give telephone and control cables exceptionally smooth insulation coatings at speeds as high as 4,000 feet a minute has been announced by the Polyolefins Division, Polychemicals Department, of the Du Pont Co.

Known as "Alathon" 3530 polyethylene resin, it is available in commercial quantities. Ten standard Munsell colors, based on this resin and coded "Alathon" 3533, are also available, according to Michael A. Kubico, wire and cable industry manager.

Wire insulation produced with the new resin is claimed to have excellent electrical properties. Such insulation also is said to demonstrate fine aging properties, toughness and flexibility at low temperatures, and moisture resistance.

Thin wire insulations of "Alathon" 3530 applied at high speeds are very



for the right number in line and drop wire insulation...

Monsanto Polyethylene compounds MPE 12 and MPE 11302 help make line and drop wire insulation economical to use and maintain because they impart superior weather-aging characteristics, good abrasion resistance, and resistance to fatigue, insuring long service life. MPE 12 and MPE 11302 contribute to excellent appearance—smooth surface, good gloss, and excellent carbon black dispersion.

Both offer fast extrusion rates. You can be sure of product uniformity because of Monsanto blend to blend uniformity. These resins impart good physical and electrical properties, meeting all applicable A.S.A. and IPCEA specifications.

Monsanto Polyethylene formulations are based on long experience in supplying the specialized needs of the Wire and Cable Industry. MPE 12 and MPE 11302 are but two in Monsanto's range of polyethylene resins developed for wire insulation. For more information, write to Monsanto Chemical Company, Plastics Division, Room 827, Springfield 2, Mass.

Monsanto

smooth. Laboratory measurements on 10-mil coatings over number 22 AWG, applied at 3,800 feet per minute, deviate an average of only 13 microinches from a normal diameter, the company says. Surface measurement indicates smooth wire coating.

The new resin may be colored with concentrates to meet the respective color requirements of ASTM D1248-60T, Type 1, Class A, Grade 4; L-P 590, Type II, Grade 7; and those of the Rural Electrification Administration.

The company states that since the molecular weight of "Alathon" 3530 polyethylene resin is higher than general purpose insulating polyethylenes, its melt index of 0.3 is lower. Stock temperatures in the range of 400 to 450 degrees Fahrenheit have provided good coatings. Request NP1694.

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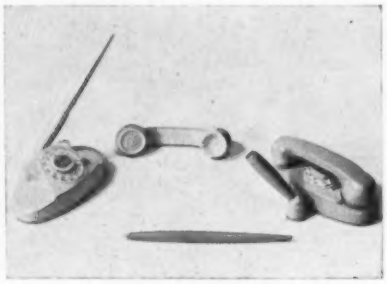
TELEPHONE PEN SETS — Mastercraft Pen Co. has announced the availability of four new telephone pen sets and pens.



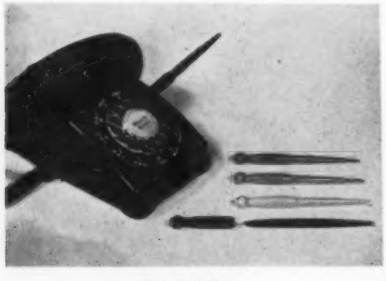
#700 Tel-O-Pen set.

The #700 Tel-O-Pen set (Princess, Cinderella, Petite and Starlight) comes in two models, one with the pen mounted in front, the other with the pen in back.

This desk pen set is weighted; therefore it can double as a paper weight. The swivel assembly of the holder allows the pen to rest at any angle.

Both models come in light beige, white, blue, pink and turquoise.

Mastercraft's Dial-A-Pen, in colors to match telephone sets, makes dialing easier and saves manicures while providing a handy pen ready for use.



Dial-A-Pen.

Dial-A-Pen is available in same colors as the #700 above plus ivory, yellow, red, green, gray, black and rose beige.

It is attractively packaged for use as a gift.

Tel-O-Pen desk set.

The Tel-O-Pen desk set, announced by Mastercraft, also matches telephone colors. It can be used as a paper weight.

Each set is equipped with a matching ball point pen available with fine or medium points. The pens take standard refills.

Size of the set, which is a ⅛ scale model of a Bell System telephone, is 2¾ inches x 4½ inches x 7½ inches.

Colors offered are light beige, moss green, ivory white, aqua blue, rose pink, rose beige, cherry red, light gray, black and pastel yellow.

Miniature telephone coin bank.

Mastercraft also features a miniature telephone coin bank with a matching pen.

The bank is a molded scale model of a color telephone. It is equipped with a steel lock-plate in the bottom of the base and two keys. Capacity is approximately $20 in small coins, which can be inserted in the quarter size slot under the removable handset or in the half dollar slot in the bottom lock plate.

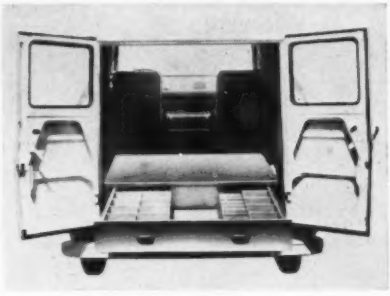
Size of the telephone is 4½ inches x 2¾ inches x 7½ inches. The pens are available with fine or medium points.

Banks and pens come in the same colors as the Tel-O-Pen desk set above.

Special prices are available to telephone companies and their employes. Request NP1695.

•

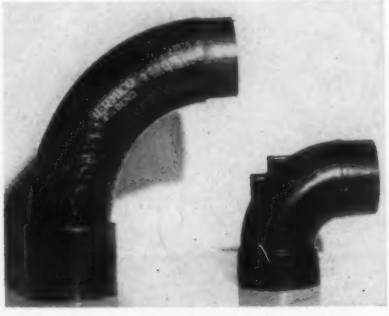
MATERIAL AND SUPPLIES DRAWER—For installation in the new Ford "Econoline" and Chevrolet "Corvan" trucks, Stahl Metal Products, Inc. is offering the Stahl material and supplies drawer. The drawer accommodates tools and materials, keeps everything in its place in order.



The Stahl roller-and-guide mechanism is reported to provide an easy-to-operate drawer which will support 300 pounds, even when fully extended; rolls easily when loaded. The drawer may be installed to open outside of truck if preferred. Request NP1696.

•

PLASTIC FITTINGS—Plastic fittings in various types and sizes have been added to the fibre fittings line of Brown Co.'s Bermico Division.



Included are plastic one-quarter and one-eighth bends, wyes and tees.

However, Bermico states that its "Lifeguarded" fibre fittings are still proving to be most popular. The fibre

What was Bell Telephone Laboratories doing

ON FRIDAY, JUNE 30, 1961?

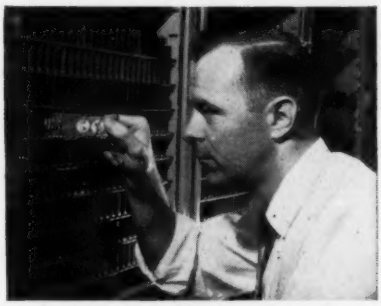
It was exploring the communications possibilities of the gaseous optical maser — a device which generates continuous coherent infrared radiation in a narrow beam.

It was preparing an experiment in world-wide communications using "active" satellites powered by the solar battery, a Bell Laboratories invention.

It was completing the development of a new "heavy route" Long Distance microwave system capable of handling over 11,000 two-way conversations at once.

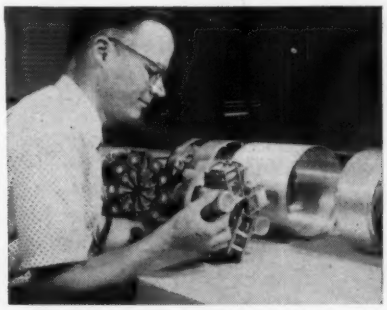
It was developing an anti-missile defense system designed to detect, track, intercept and destroy an enemy ICBM — in a matter of minutes.

It was demonstrating the potentialities of the superconducting compound of niobium and tin for generating, with little power, magnetic fields of great strength.

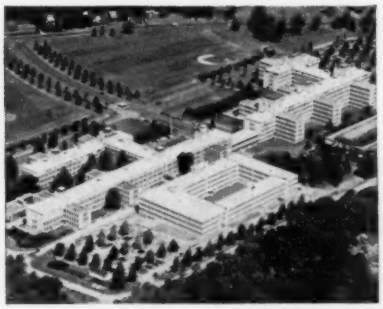


It was experimenting with an electronic central office at Morris, Ill., which is capable of providing a wide range of new telephone services.

It was perfecting the card dialer which permits, through insertion of a punched card into a slot, automatic dialing of frequently used numbers.



It was developing improved repeaters or "amplifiers" to increase greatly the capacity and economy of undersea telephone cable systems.



It was continuing its endless search for new knowledge under the leadership of scientists and engineers with world-wide reputations in their chosen fields.

Bell Laboratories scientists and engineers work with every art and science that can benefit communications. Their inquiries range from the ocean floor to outer space, from atomic physics to the design of new telephone sets, from the tiny transistor to massive transcontinental radio systems. The goal is constant—ever-improving Bell System communications services.

BELL TELEPHONE LABORATORIES

World center of communications research and development

one-quarter and one-eighth bends have a larger radius, as compared to the plastic, and therefore, the company says, promote efficient hydraulic flow and help reduce back pressure and potential stoppage.

The fibre fittings are made from the same bituminized fibre materials as "Lifeguarded" Bermico pipe, which the company reports has proven to be lightweight, easy to work with, root proof, noncorrosive and long lasting. Request NP1697.

•

TRANSISTORIZED MILLIVOLTMETER—An AC transistorized millivoltmeter, described by Electronic Applications, the manufacturer, as having an accuracy of ± 1 per cent 20 cps to 600 KC, is now available. This is the model VT-3A.

The field measurement accuracy of the VT-3A is stressed by the company, because use of 60-cycle power, which might interrupt measurement, can be avoided. The telephone engineer will be enabled to use lab instruments with lab accuracy in the field with the aid of the VT-3A, the company states.

The company also points out that the VT-3A has 100 per cent photographic linearity calibration, and a very broad frequency response of ½ cps to 5 MC.

The millivoltmeter offers, in addition, 22 megohm input impedance on 12 ranges—from .001 V to 300 volts. Request NP1698.

•

CONCENTRATED EXPLOSIVE — "Petronite," a solid explosive with a concentrated blasting force which greatly cuts down the heaving and cratering usually incurred in the use of dynamite, has been introduced nationwide by the Utility Equipment Co. International Inc. The company is distributor for Petroleum Tool Research, the manufacturer.

Utility Equipment says Petronite is perfect for controlled blasting in construction operations, such as telephone pole installation, pipeline trenches and foundations.

According to the company, Petronite is safer in transport, storage and field handling than other commercial explosives. Its shock sensitivity, as measured by the standard drop-hammer test, is 10 times less than that of dynamite. Petronite won't detonate by impact of a rifle bullet or the equivalent. Also, it cannot be detonated by fire. There is no chemical decomposition, no oozing of oils or plastic substances. It is non-toxic and non-corrosive.

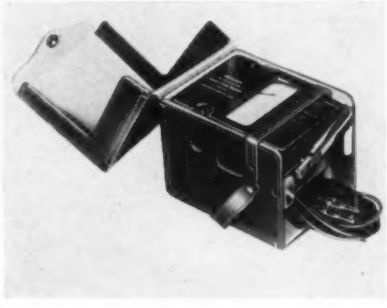
Petronite is delivered ready to use and can be detonated by a No. 8 electric or fuse blasting cap. Request NP-1699.

•

INSULATION TESTER — The new Mark III Megger® insulation tester, announced by the James G. Biddle Co. is the pocket-size successor to the Midget Megger.

The Mark III, with its constant voltage hand generator, is said to be always ready for immediate use. It provides steady testing voltage without dependence on batteries or other current supply.

Three ranges of instruments are available: 100 volts dc, 0.02-20 megohms; 250 volts dc, 0.05-50 megohms; 500 volts dc, 0.1-100 megohms. Each of these models is also available with the added feature of a double scale and selector switch for 0-10,000 ohms.



The optional camera-type leather case reportedly offers maximum protection for the instrument in severe field service and permits full operation of the instrument by simply flipping back the lid—the leads store in a compartment under the test set.

The constant voltage feature of this new instrument is claimed to make it an efficient instrument for accurate and dependable tests on a wide variety of electrical applications where reliable results are required.

The single scale, 500-volt model is suitable for testing equipment operating on 115 and 230 volts. The 250 and 100-volt instruments are for lower voltage circuits. Request NP1700.

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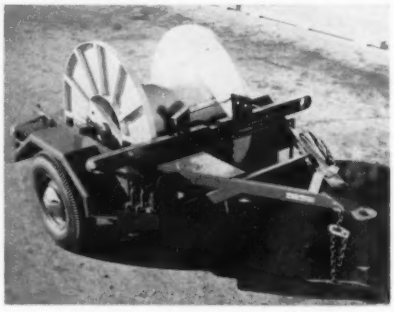
POLE AND STRAND DOLLY—The Hogg & Davis Model H40B0T2 dolly is reported to have great versatility for many utility requirements.



This unit has a 4,000-pound capacity, full hydraulic lifts and 20-inch to 50-inch by 44-inch wide reel capacity with free access area to reel. The rear bolster is not required when transporting reels as they can be locked in by bracket.

Built to meet the demands of utilities engaged in strand or cable reel transporting and pole and material hauling, this unit with hydraulic lifts is said to make it possible for one man to load or unload maximum-sized reels.

Accessories are available including reel brake, dump bed and torq-a-reel as well as cones, collars and mandrel. Request NP1701.

•

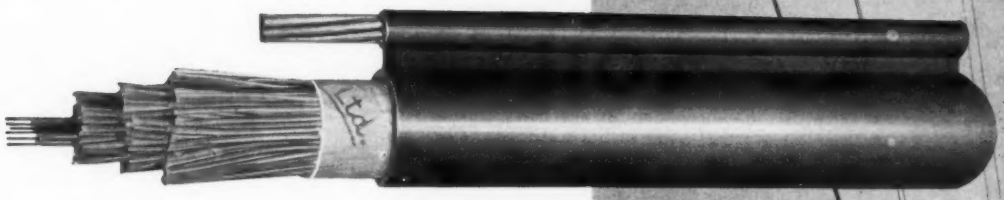
FIREPROOF JACKETING — ATLAS type Zippertubing is being used in the southern California area, the Zippertubing Co. reports, to provide an instant fireproof jacketing for telephone poles.

ATLAS Zippertubing is described as an aluminized asbestos jacket, originally developed to protect cables from missile blasts and engine or rocket heat. Its flame-resistant qualities and heat-reflective aluminum coating have made it a great aid in protecting telephone poles from the destruction of fire, Zippertubing states.

Application is termed "extremely simple" and takes just a few minutes. The Zippertubing is wrapped around the telephone pole, and zipped closed. This closure is stitched to the jacket material with Teflon-coated glass thread, and both edges of the Zippertubing have a zipper track, and also a slider.

HITACHI

This is the Gourd-type cable — a new shape that contains a suspension strand, a communication line, and the answer to several problems!



This unique local or exchange area cable developed by Hitachi derives its distinctive "gourd shape" from the polyvinyl chloride sheathing that totally encloses the polyethylene-insulated communication line as well as its parallel suspension strand. It can be used in all the applications of conventional PE-insulated PVC sheathed cable and, in addition, is suitable for installation on steep grades where paper-insulated lead sheathed cable could not be used.

Another notable feature of the gourd-shaped cable is that it dispenses with the need for hangers, making installation easier, cheaper and faster. It can be installed close to buildings and power lines with complete safety (the suspension strand can be grounded to reduce electrostatic induction in the latter instance), retains high transmission qualities under the most trying weather conditions, and successfully withstands attack by salt or airborne chemicals.

Communication Equipments

Hitachi, Ltd.
Tokyo Japan
Cable Address: "HITACHY" TOKYO

For permanent closure, the manufacturer says, Zippertubing edges may be sealed with ZT sealer, thus, fusing the tracks together. Request NP1702.

•

PORTABLE POTENTIOMETER TEST PANEL—A new, portable potentiometer test panel that eliminates use of a voltage divider in tests for function angle is now available according to George Rattray & Co., Inc., manufacturer of Raytron precision potentiometers. Rattray is a subsidiary of Instruments for Industry, Inc.

The unit, Model STE-2, is designed with a switching circuit that allows evaluation of a potentiometer at zero output and at 100 per cent of the excitation voltage without a voltage divider, thus, the company states, prolonging the life of the detent in the divider. Basic design of the unit is standard, but all components necessary to test potentiometers are incorporated in the single panel.

The panel tests potentiometers in a bridge-type circuit, and the output voltage is a ratio of the input excitation voltage. This voltage is then compared with that of a precision voltage divider and subsequently fed into a dc-ac chopper amplifier from which output is monitored by an oscilloscope.

A plug consisting of a two-wire shielded cable with one ground connection to the shield is built into the test panel to accommodate an oscilloscope. A push button is also included in the panel to provide a signal for initial calibration of the oscilloscope.

Adjacent to the oscilloscope plug is a tagged three-wire shielded cable that connects with the potentiometer that is to be tested.

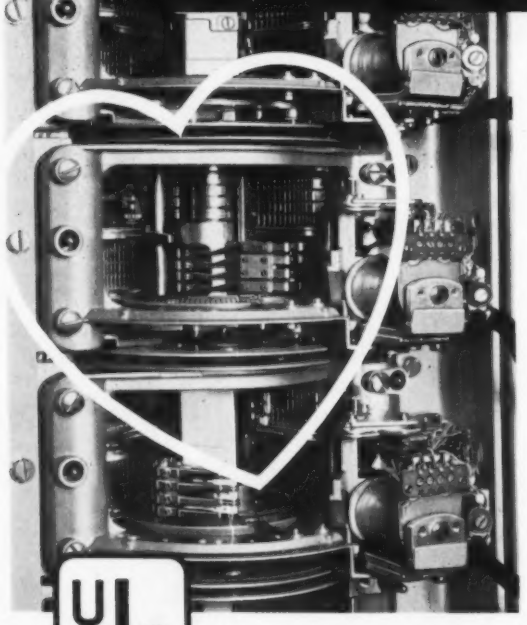
The Model STE-2 is equipped with a self-contained battery and operates under power of 115V, 60 PCS.

The test panel can be used in field work and as test equipment during incoming inspections of precision potentiometers. Request NP1703.

•

SMALL-DIAMETER MASONRY BIT—The New England Carbide Tool Co.,

MOTORSWITCH



by USI

. . . Heart of the Central Office Telephone Exchange

The use of the USI Motorswitch enables central offices to combine the simplicity of step-by-step with superior speed and flexibility of common control!

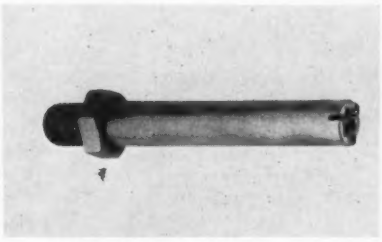
- **High Stepping Speed** — 160 contacts per second (compared to 30 or 40 on stepping switches.)
- **Variable Availability** — Means economy through fewer trunks, greater trunk usage.
- **Precious-Metal Contacts** — Palladium-silver (compared to base metal) provides least contact resistance, maximum reliability in talking paths.
- **Solderless Bank Contact Strips** — Reduce soldering connections by 90% . . . increase reliability . . . simplify regrading . . . reduce number of grading and level hunting switches.

USI CORP.®

UNITED STATES INSTRUMENT CORPORATION

CHARLOTTESVILLE, VIRGINIA

Inc. has developed a small-diameter bit said to be better for drilling holes in concrete, tile, terazzo, marble, brick and porcelain. Named the Necor Bit, this new type drill is described as utilizing special, long-lasting carbide cutting teeth.



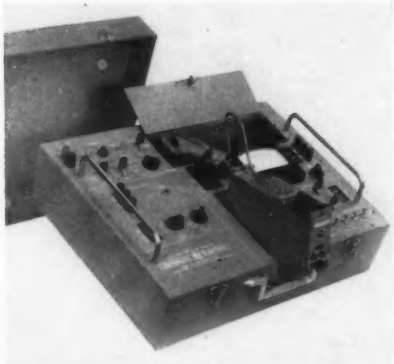
New England Carbide states there are many advantages in the use of Necor bits for those faced with the problem of drilling small-diameter holes in hard-to-drill materials. They are said to cut faster and easier and possess longer bit life than any other drills used.

Another advantage of this new wet drilling bit is that it can be readily re-sharpened when necessary.

Necor bits can be used with any electric rotary hand drill, or drilling machine, and are available in sizes from ½-inch to 1¼-inch diameter. Request NP1704.

•

REPEATER AND TEST SET—Automatic Electric Co. announces that fast, easy repeater installation and adjustment are now possible by teaming its new compact AT-6 repeater with its portable test & installers set.



The AT-6 negative impedance repeater is a combination series and shunt repeater in one unit, measuring 2 inches wide x 5¼ inches high x 10¼ inches deep (overall). AE points out that with this space-saving design, up to eight repeaters can be mounted on a single shelf of a 19-inch relay rack. A 23-inch rack will accommodate up to 10 units.

The repeater uses line build out units (LBO's) to compensate for "talker echo" and provide smoother gain char-

The Galvanized Steel Strand with the built-in raincoat

Everybody talks about the weather . . . CF&I *does* something about it. To protect Galvanized Steel Strand against corrosion, CF&I builds in a zinc coating that shrugs off moisture. The result is a long-lasting, weather-resistant steel strand that is ideal for messenger wire applications.

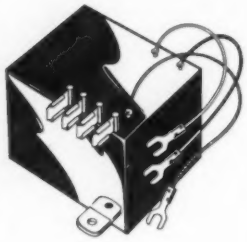
Also highly suitable for guying assignments, CF&I Galvanized Steel Strand is made in seven- or three-wire constructions . . . in accordance with ASTM specification A-122. In addition, it can be tailor made to meet your particular specifications.

Like all CF&I products, Galvanized Steel Strand is made by a nation-wide company to meet high American standards. For immediate delivery, contact your nearby CF&I sales office. 8130-B

THE COLORADO FUEL AND IRON CORPORATION
Denver • Oakland • New York
Sales offices in All Key Cities

END RURAL TRANSMISSION PROBLEMS . . .

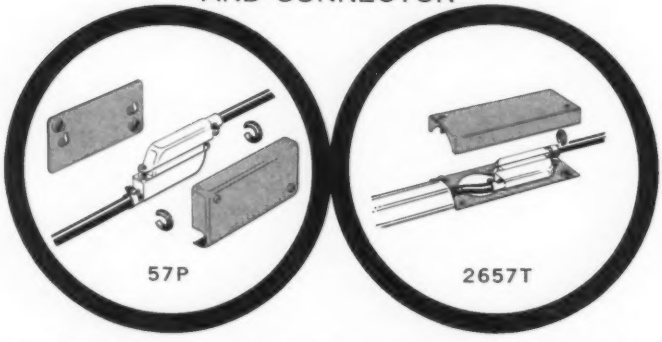
obtain top quality/low cost transmission amplification for distant subscribers on existing facilities and new cable installations of small gage. The Teletek 501 is a miniaturized transistor **Telephone Line Subscriber Amplifier,** easily installed in 500 type sets and A.E. pay stations. Immediate amplification gain of 12db (transmit) and 15db (receive) using only regular line voltage.



Installed and tested in existing sets in seven min. maximum. Size: 1.4x 1.78x1.5 inches/Epoxy encapsulated/weight: 5½ ounces. Field proven reliability

Teletek, Inc.
1985 Placentia Ave./Costa Mesa/California
Midway 6-4436 / DDD code 714

TWO NEW FITTINGS
TO HOUSE PLUG AND CONNECTOR



For use with plug-ended multi-button telephone sets, these two new Wiremold Service Fittings are available in blue-beige, smooth enamel finish (57P), and non-glare, light gray finish (2657T). Use 57P for wall mounting; use 2657T for floor mounting with overfloor duct (1500 or 2600 Wiremold) or with underfloor duct, and for wall mounting with 4″ box. Phone for data sheet 636.

WIREMOLD®

THE WIREMOLD COMPANY ■ HARTFORD 10, CONN. ■ ADams 3-6251

acteristics, the company states. Screw terminals in the LBO network require only a screwdriver to connect components. Wire strapping and soldering are eliminated.

AE states the AT-6 is fully transistorized, saving power as well as shelf space. By utilizing a simple resistance-adjustable network, controlled from the front panel, field gain adjustment is simplified. The repeater may be used on loaded or non-loaded cable or a combination of both.

The AT-6 repeater test & installers set offered by Automatic Electric, is a portable, self-contained unit, about the size of a suitcase (20-13/16 inches x 15-21/32 inches x 7 inches). The aluminum-case set weighs 27 pounds and has its own carrying handle and cord storage compartment.

The set has a built-in signal source (oscillator) and detector (voltmeter); AE says the installer need carry only this one piece of gear to the repeater shelf. With a repeater plugged into the test set, 48-volt power can be taken directly from the shelf jack. The set will test series or shunt sections separately or any existing AT-2 series or AT-3 shunt units. It can also measure return loss of the line.

Price: AT-6 repeater —$100 each
LBO network —$ 15 each
Test & installer set—$650 each
Delivery: 10 days delivery after Oct. 1, 1961. Request NP1705.

Electronic Secretaries Supply Negotiation News

A unique method of disseminating news of labor-management negotiations was used recently by General Telephone Co. of Indiana, Inc., Fort Wayne. Electronic Secretary telephone answering sets were installed to bring management personnel closer to the bargaining table. Once established, the union also started issuing daily bulletins through Electronic Secretary units.

The company's Fort Wayne office reports that recorded bulletins were issued to 12,325 callers over a span of approximately two months.

Another 4,700 callers encountered busy signals; and additional instruments were placed in service to remedy the overload.

Tedrow Named by Lenkurt As Corporate Secretary

James W. Tedrow has been elected corporate secretary of Lenkurt Electric Co., Inc., and has joined the company's management staff at San Carlos, Cal.

Since 1955, he had been a member of the legal staff of Automatic Electric Co., Inc., Northlake, Ill.

IN THE NATION'S CAPITAL

Continued from page 18

result in increased workloads without breaking FCC's logjam of back cases. The senators apparently were able to press this reasoning on their junior colleagues because a House-Senate Conference Committee agreed to the Senate version. The bill now goes back to both houses for a final vote.

FCC commissioners, as well as those of other regulatory agencies, are slated for raises of $2,000 if a bill introduced by Sen. Warren G. Magnuson (D., Wash.) is enacted. S.2307 would increase the commissioners' annual salary from $20,000 to $22,000, and the chairman would receive an increase from $20,500 to $22,500.

President Kennedy? Sorry, Wrong Party!

Even the White House is plagued by wrong numbers and, of all things, even over one of its super secret telephones. It was disclosed on Aug. 2 that President Kennedy recently answered the emergency telephone beside his bed and heard a caller ask if "the animal hospital" was on the line? "That story is true," White House Press Secretary Pierre Salinger told newsmen.

Salinger confirmed a published report about the incident but hesitated to volunteer much more information about it. But he laughed good naturedly when one reporter asked, "Have you been running an animal hospital?"

The episode took place when Kennedy, working late in his bedroom, heard the ring of a telephone which is supposed to be used only in a time of crisis. Salinger declined to say if the President had gotten his telephone number changed as a result of the call, or if anything more was known about the wrong number.

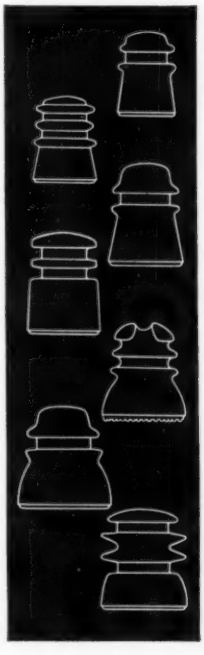
75% of U.S. Homes Have Phones

According to a U. S. Census Bureau report, released Aug. 2, three out of every four households had telephones in March, 1960. On the basis of data assembled in connection with its Current Population Survey, the Census Bureau estimated that 39.3 million, or about 75 per cent of the 52.6 million households were serviced by telephones. A previous survey covering March, 1958, indicated that 36.5 million, or 73 per cent of an estimated 50.4 million households were serviced by telephones at that time. The availability of telephones ranged from about 43 per cent for the households in the lowest income group (under $1,500) to about 95 per cent for the highest income categories.

The information on telephones was

NUMBER 17 - *Toll Grade. Has about the longest leakage path possible with a single petticoat. For exchange circuits and lines not exceeding ten miles.*

HEMINGRAY INSULATORS



Easily and Economically Installed

Hemingray Glass Insulators stand up under severe conditions, do not deteriorate, provide the service you need to assure continuous operation of communication lines. The dependability of Hemingray Insulators as proved by their years of sturdy performance is one of the reasons behind their world-wide acceptance.

Hemingray has pioneered many insulator developments to keep pace with requirements, improve communication systems, assure you a dependable source of supply.

The immediate availability of these insulators is further assurance of Hemingray dependability. An up to date distribution system makes Hemingray Insulators available when you want them and where you need them.

Hemingray Glass Insulators are a product of Kimble Glass Company, subsidiary of Owens-Illinois, Toledo 1, Ohio.

There's a Hemingray Insulator to meet every communication line requirement.

World standard for quality Since 1870

HEMINGRAY INSULATORS
AN (O) PRODUCT

OWENS-ILLINOIS
GENERAL OFFICES · TOLEDO 1, OHIO

TELEPHONE CABLES

For Every Application

INSIDE TELEPHONE

TYPE 123

Specifically designed for inside telephone station, intercommunication, private branch exchange and special plan wiring systems.

Available in No. 22 and 24 AWG from 6 to 101 pairs.

Light weight for easy installation.

Moisture resistant for damp ducts.

Fully color coded insulation for ease of termination and permanence in polarity identification.

Tough flame and abrasion resistant PVC sheath.

Rip cord to facilitate stripping at termination.

THE
PLASTIC WIRE & CABLE CORPORATION
JEWETT CITY, CONN.

HAVING TROUBLE WITH OPENS?

Solve them quickly, with a Neale Troubleshooter's tone and the "Cable Trouble Shooting" booklet.

The Neale Troubleshooter's tone is an inexpensive, easy to use instrument, for talking and locating trouble in telephone cable.

The tone has circuits for high and low frequency testing, a circuit for talking, and a buzzer circuit for testing continuity.

It comes complete with batteries and four leads, all contained in a strong case

with an over-the-shoulder leather carrying strap. It weighs only 9 pounds with batteries.

JUST OFF THE PRESS: The Cable Trouble Shooting booklet has ten trouble shooting circuits, written and illustrated so the layman can understand them. We will be happy to send you a FREE copy of this booklet; just write to address below.

CABLE SPINNING EQUIPMENT CO.

3100 TOPEKA AVE.
TOPEKA, KANSAS

obtained from administrative records maintained as part of the Current Population Survey of the Bureau of the Census.

In households occupied by primary families, 77 out of 100 had telephones as compared with 62 per cent of the households of primary individuals.

Fifty-two per cent of the non-white households had telephones, compared with 77 per cent of the white households.

Nearly eight in 10 of the households (79 per cent) with male heads 25 to 64 years of age had telephones, compared with about one-half of households with male heads under 25 years old. The proportion of households with male heads over 65 years of age with telephones was nearly seven in 10.

Among households of married couples living together, 78 in 100 had telephones, as compared to 69 per cent of households whose head was widowed or divorced, and 63 per cent of households headed by single persons.

Nearly three in five households (58 per cent) which had moved during the past year had telephones, while four out of five (79 per cent) still living in the same house as a year earlier had telephones.

Household heads in professional and managerial occupations were most likely to have a telephone in their homes, whereas private household workers were least likely. About three out of 10 households (29 per cent) headed by farm laborers, or farm foremen, had telephones, the lowest proportion for any occupational group. Households of farmers and farm managers had about the same proportion, 59 per cent, as households of non-farm laborers, 58 per cent.

Copies of the report, Series P-20, No. 111, Characteristics of Households with Telephones, may be purchased from the Bureau of the Census, Washington 25, D. C., or from field offices of the U. S. Department of Commerce, for 10 cents.

New TVA in the Northwest?

The House of Representatives must decide soon whether it is to back down in its opposition to authorization of the construction of a 95 million dollar electric-generating plant in Hanford, Wash., that would provide subsidized power for the Northwest.

In an unrecorded vote earlier, the House voted down this proposed project 176 to 140. A few days later the Senate approved the project.

Now the House is under heavy pressure to yield to the Senate, and join it in approving this subsidized-power proposal.

According to Representative Van Zandt of Pennsylvania, "This power project would become, if built, the first federal steam electric-generating plant outside the TVA area. It would represent an extension of the TVA principle—a first step toward a TVA in the Pacific Northwest."

Conservatives are realigning for a battle.

High-Level Chitchat

When the new microwave communications system across Canada, linking Alaska with the other states, was inaugurated on July 22, the following high-level international chitchat took place between President Kennedy in Hyannis Port, Mass., and Prime Minister John Diefenbaker in Whitehorse, Yukon Territory, Canada:

THE PRESIDENT: Hello—Prime Minister Diefenbaker?

THE PRIME MINISTER: Hello, how are you, Mr. President?

THE PRESIDENT: Prime Minister, I am delighted to talk to you again.

THE PRIME MINISTER: I am very pleased at this opportunity to welcome you, for the people of Canada. This is a very great occasion. I wish you could have been here. Here we have representatives of the United States, the consul general representing the ambassadors; Colonel White, the commander of the Alaska Force connected with this project, and I only wish that you, instead of being at the Atlantic post, were here in Northern Canada with us, to meet not only with the Canadians but generally with Americans who are present here.

THE PRESIDENT: Well, thank you, Prime Minister. I am delighted to speak to you all the way across from the coast of New England to the western part of Canada and reaching into Alaska. I want to congratulate you and the people of Canada upon adding a great new link to the communications system that binds this continent together, and I know that the governor of Alaska and all of the people in our 49th state welcome this great addition to their contact with Canada and the rest of the United States.

THE PRIME MINISTER: Yes, Mr. President. This is a fine illustration—what I have just spoken of—the practical cooperation of the Canadian-American partnership. As I conclude, may I say this, Mr. President: If you give us leadership in the world contest for the hearts of men, we wish you all good fortune, we wish you that vision which will bring about peace for all mankind.

THE PRESIDENT: Well, Prime Minister, I want to express my congratulations to you again. I think this great new effort can show us what can be done once again by the people of Canada and the United States. I want to congratulate you personally and also to express our very best wishes to you and the vigorous people of western Canada.

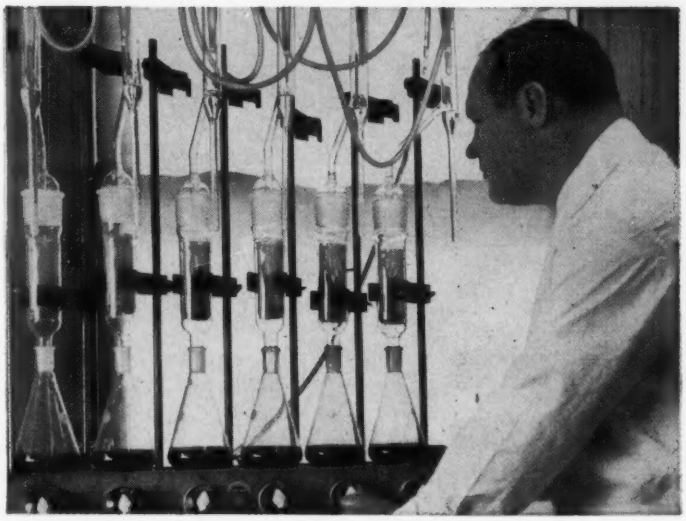
THE PRIME MINISTER: Thank you very much, Mr. President. The best to you.

THE PRESIDENT: Thank you, Prime Minister—bye-bye.

TECHNICAL BRIEF NO. 60-1

By D. L. DAVIES, *Manager, Technical Dept. Wood Preserving Div., Koppers Company, Inc.*

USE OF THE ASSAY METHOD TO DETERMINE RETENTION IN POLES



PRESENT STATUS

The Assay Method of determining preservative retention in pole charges has been described in Koppers Technical Bulletins W-101 and W-102. Following is the status of the Assay Method as a replacement for the less accurate gauge method of determining preservative retention.

The Western Electric Company, Inc. over 2 years ago made the Assay Method a part of its specifications on all new pole contracts. This major specification change was adopted to eliminate "weak sister" charges — charges which meet standard specifications by other measurement tools, but which in reality do not contain sufficient preservative to provide long-lasting protection.

The Rural Electrification Administration in April, 1960 issued new specifications which make mandatory that determination of retention in poles be made by the Assay Method. Many REA utilities have suffered financial loss from premature pole failures. They, too, want to eliminate the "weak sisters".

The Federal Government has a tentative specification TT-W-571f, now being reviewed by industry, which also calls for the Assay Method for determining retention (without alternates) in both poles and piles.

The AWPA adopted the Assay Method for determining retention in poles as a "full standard" at the April 24-26, 1960 meeting.

HOW TO APPLY THE ASSAY METHOD

In applying the Assay Method to poles, the specifications require that the outside ½" of the pole section be discarded. This section usually contains about 14-lb. preservative per cubic foot. Specifications further require that the next 1½" be assayed for retention. Therefore, an 8-lb. normal gauge retention charge must have a minimum of 6-lbs. per cubic foot in this zone. A 10-lb. treatment must have 7½ lbs. and a 12-lb. treatment must have 9-lb. in the assayed zone. No undertreatment allowance is permitted. Adoption of these retention requirements represents the most significant advance in standards for pine pole treatment since the adoption of 2½" or 85% sapwood penetration requirement in the late 1930's.

ANY COMPANY CAN ADOPT THE ASSAY METHOD

The status of the Assay Method for determining retention has advanced to the stage that any company can adopt it by a simple notation on the purchase order specifying that "poles are to be treated to a retention of *x* pounds/cubic foot as determined by assay".

• • • • • • • • • • • •

For the full report on using the Assay Method, or answers to technical questions on poles or pole treatment, write: Koppers Company, Inc., Wood Preserving Division, Technical Dept., Room 757, Koppers Building, Pittsburgh 19, Pa.

C-45

KOPPERS® **KOPPERS**
PRESSURE-TREATED WOOD

NEW DEVELOPMENTS IN TELEPHONY

Continued from page 24

lineman to handle while wearing gloves. The new shell embossings will engage the drop wire jacket at initial tensions and prevent insulation cutting at maximum tensions.

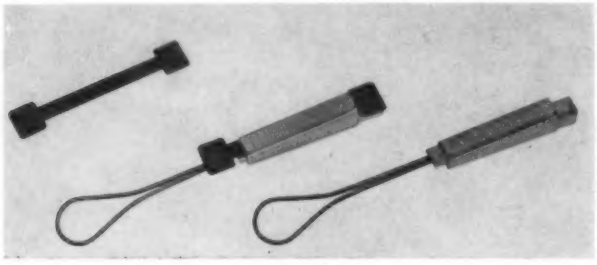


Fig. 65. Drop wire clamp.

Extensive tension testing proves this new clamp will support all drop wires for which it is recommended beyond the breaking strength of the wire. This new clamp design has also passed rigid vertical stationary load tests where the clamp with a drop wire installed must hold a minimum of 300 per cent of normal installation tensions without electrical failure.

These clamps are recommended for the following drop wires:

P-6 No. 17-20 AWG Non-reinforced parallel
No. 17- 20 AWG Twisted pair

PS-6 No. 17-20 AWG Dumbbell non-reinforced.
No. 17-20 AWG Dumbbell reinforced.

(To Be Continued)

Volunteers for Blind Lauded By Library of Congress

The *Information Bulletin* of the Library of Congress, published July 17, 1961 (Vol. 20, No. 29), reporting on progress by the Division for the Blind, reveals that the Telephone Pioneers of America are active in more than half the states in assisting in volunteer repairing of talking-book machines for the blind.

The *Bulletin* states, "These civic-groups of technical persons, many of them retired, work at the state and community levels with the machine agencies in a variety of tasks, ranging from instructing agency personnel to repairing the machine in the blind person's home."

Western Rural Group to Meet in September

The Western Rural Telephone Association will hold its 18th semi-annual meeting on Sept. 7 and 8 in Portland, Ore.

Association members provide service to rural areas from Alaska in the North to Wyoming in the South.

Directors are: Richard Crowe, Dos Palos, Cal.; James W. Damon, Mt. Vernon, Ore.; Donald Dickson, Rupert, Ida.; Chester Gibbs, Colfax, Cal.; William Graeper, Aurora, Ore.; Milton Larson, Lynden, Wash.; Henry Mumaw, Aberdeen, Wash.; Glenn Stover, Mt. Vernon, Wash., and Floyd Ross, Parker, Ariz.

Officers are: President, Mr. Crowe; vice president, Mr. Damon, and secretary, R. A. Ringman of Mt. Vernon, Wash.

Mr. Ross will serve as program chairman for the September meeting.

Telephone Circuits Link 110 Offices for Sales Meeting

Four thousand Royal McBee Corp. sales executives at 110 different locations held a national sales conference on Aug. 1 without moving from their offices.

The conference was accomplished by telephone circuits stretching from the company's Port Chester, N. Y. headquarters to the 110 different district sales offices.

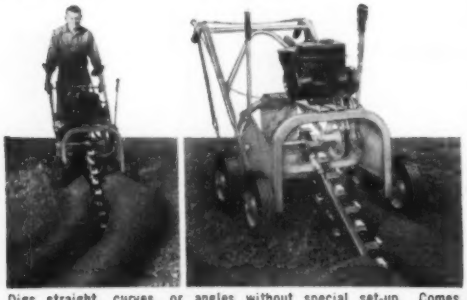
The long lines department of American Telephone & Telegraph Co. said this was the most extensive conference arrangement it had ever set up.

The session lasted for one hour. The salesmen were addressed by Royal McBee's president, executive vice president and vice president-marketing.

Wade Chairman in California

The board of directors of California Interstate Telephone Co., Victorville, has announced the election of Willard Wade, president, to the position of chairman to replace Reid Gardner, who resigned July 31. Mr. Wade will continue to serve as president.

TELEPHONE COMPANIES USE POW-R-SPADE to lay cable and conduit. Savings and extra profits on every job. Have your own machine. No waiting. No delays.



Digs straight, curves, or angles without special set-up. Comes completely assembled. One man operation from start to finish.

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Fast trenching at lowest cost. Reduces man-hours to minutes. Eliminates disadvantages of sub-contracting. A profitable, inexpensive machine to own and operate.

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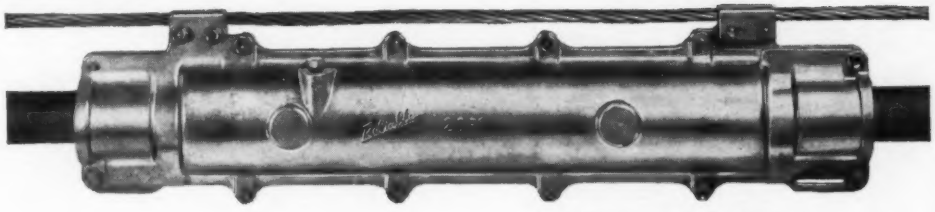
Dept. N, Rock Island, Illinois

OR TEAR OUT THIS AD — ATTACH TO LETTERHEAD AND

Now from Reliable...

splice cases



For use with lead, Alpeth and Stalpeth sheathed cables up to 1.6" diameter.

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Unprotected or protected.

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Send us your Installation Specification No. 104 and additional information on these splice cases and splice case terminals.

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Locates Trouble FAST

MODEL TE
Transistor
Exploring Coil
AMPLIFIER

A New, Different, Improved Amplifier in ultra small size. This new transistor amplifier is the newest development, superseding our well known Model E Amplifier.

High Gain—Signal gain with proper impedance match, 200 to 400 times input signal. Gain 2 to 3 times that of Model E. Gain is adjustable by knob.

Very Small—One fourth the size and weight of Model E and uses only four Size Z penlights.

Rugged—Strong—Case of molded Bakelite. Receiver plug when removed from jack turns battery off.

Simply plug exploring coil and receiver into amplifier and adjust signal to comfortable receiver level. Any receiver and pickup coil will give perfect results if impedance is between 40 and 100 ohms at resistance level.

STEWART LOCATOR TESTER

MODEL A—The complete Unit for locating grounds, shorts, wet spots and other faults in cables. In addition will locate and determine the depth of buried pipe or conductor. With fish-tail exploring coil, neutral pick-up coil and headphone.

STEWART CABLE TESTER

MODEL L — SIMPLE TO USE. SAVES TIME.

More accurately locates cable faults. Also has "tone-test" features and fish-tail exploring coil and headphone.

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Division of Instrument Laboratories
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New Applications for Closed Circuit TV in B. C.

Blue chip stocks or chips of wood—British Columbia Telephone Co., Vancouver, provides facilities for watching them both through its closed-circuit TV service.

As a fast means of communication, closed-circuit television, with its wide range of applications in business, education and industry, has really caught the eye of the public in British Columbia, and the British Columbia telephone company's marketing division and sales department is going all out to provide this service to potential customers on a rental basis.

The company recently staged a demonstration for brokers and investment dealers of a new application—the instantaneous and continuous television monitoring of stock market quotations at the Vancouver Stock Exchange.

As far as it is known, Vancouver is the only city in North America where closed-circuit TV coverage of stock exchange activities has been tried. Here's how it works:

Three cameras scan the quotation board, one on mines, one on oils and the third on industrials.

The automatic cameras which require no operators, will scan each section both vertically and horizontally. Subscribers to the service would rent monitor sets which would pick up the signal from the exchange through coaxial cable hookup.

With one set only, a subscriber would have to switch channels if he wished to keep track of developments in all three sections.

Ideal arrangement would be to have three receivers for continuous and simultaneous coverage of the quotation board.

British Columbia Telephone Co.'s first installation of Sylvania camera and monitoring equipment for closed circuit television was in one of Vancouver's largest sawmill operations.

This installation consists of a camera fitted with a telephoto lens and a 17-inch standard television set used as a monitor.

The camera is mounted high above a conveyor belt carrying scrap material —sawdust, chips and bark—to a "hammer hog" machine where the scrap is pulverized for lumber byproducts. A 350-foot coaxial cable connects the camera with the monitor set placed for convenience in the boiler room.

By glancing at the screen, the shift engineer on duty can spot blockages along the belt or detect metal objects in the scrap and stop the belt before it gets to the machine.

As a result, time-consuming and costly delays through blockage have been eliminated in this operation.

The British Columbia telephone company provides full maintenance of its equipment at the subscriber's site.

Simonson Retires from Signal Corps Post

After completing over 40 years of service in the telephone industry, Bernard Simonson, chief of the telephone engineering branch, U. S. Army Signal Engineering Agency, will retire on Aug. 31.

During his 40-year telephone career, Mr. Simonson has worked on the development and engineering of telephone switching systems, being employed by Automatic Electric Co. in Chicago, Peninsular Telephone Co., Tampa, Fla. and the Stromberg-Carlson Co., Rochester, N. Y.

BERNARD SIMONSON

For the past 10 years, he had been with the U. S. Army Signal Engineering Agency in Washington, D. C. and has served as chief of that agency's telephone engineering branch for the past three years.

Mr. Simonson will continue to reside in Churchton, Md.

California Independent Completes Part in SAGE

California Interstate Telephone Co., Victorville, on Aug. 2 completed the construction phase of its part in the SAGE (semi-automatic ground environment) program.

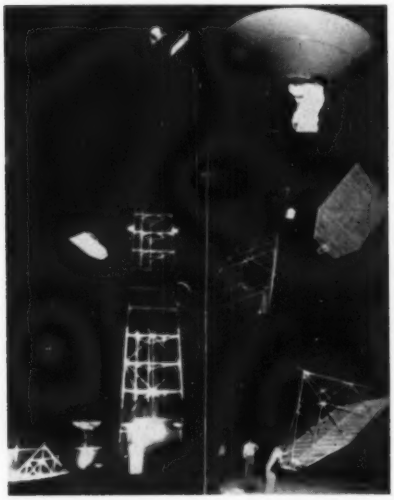
Responsible for furnishing communications and for transmitting and receiving digital data information between the Boron (Cal.) Air Force Station and San Bernardino, the company devoted over two years to the

Signing contract setting company's SAGE participation in motion is Willard Wade, president, California Interstate Telephone Co. Standing at left is Guenther M. Philipp, representing ITT Kellogg, primary supplier of the company's equipment for SAGE. In middle is Maj. W. E. McKeever, (at the time) a SAGE coordinating director.

planning, engineering and construction of the system.

On Aug. 2 the Boron installation was officially placed in service. At San Bernardino, connecting facilities channel radar information from Boron and other stations to a SAGE direction center.

California Interstate's investment in the system exceeded 1¼ million dollars. The company erected a new microwave tower at Boron, and additional microwave facilities were built on existing



California's Interstate SAGE participation included readying a microwave system between Boron (Cal.) Air Force Station and San Bernardino. Here, new and larger microwave reflectors are installed on the company's existing microwave tower at Victorville. Work was carried on during early morning hours to eliminate interruption of service during peak traffic times.

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Frees Nuts, Bolts, Studs and Other Corroded Poleline Hardware

Spray rust away instantly—here is the fast, simple and effective way to free corroded nuts, bolts, studs, pipe threads and other pole line hardware. You can spray from any angle—and reach into places that would usually be inaccessible.

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Full 16 Oz. — 12 to the Carton

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Order from your Telephone Supply Distributor

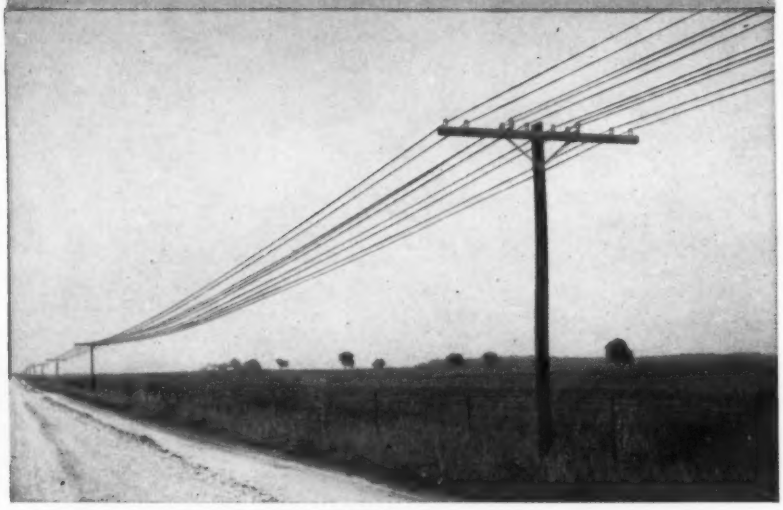
Crapo HTL-135

High Tensile Line Wire

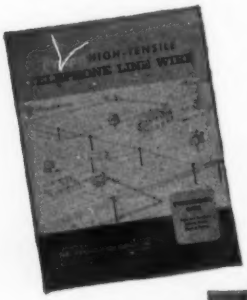
MADE TO WITHSTAND HEAVY STORM LOADS

Time and time again, *Crapo* HTL-135 has demonstrated its ability to stand up under heavy ice and wind loads when other conductors failed. This can be attributed to the fact that *Crapo* HTL-135 combines high strength with high fatigue endurance plus superior elastic qualities which enable it to spring back into place when loads are removed. The result: service interruptions are minimized, re-sagging is seldom necessary, where this rugged telephone wire is used.

The excellent telephonic transmission characteristics of *Crapo* HTL-135 make practical subscriber loops of 14 to 15 miles with normal voltages and equipment. Longer loops are possible where higher voltages and more sensitive telephone sets are employed. For dependable, long-span, low cost rural lines, specify *Crapo* HTL-135.



HERE'S PROOF OF DEPENDABILITY



The Crapo HTL-135 in this typical rural line of 300-foot spans was subjected to two heavy ice storms within 14 months. This photo shows the line, without resagging, three months after the second storm.

Write for Manual TM-59 containing complete engineering data!

Crapo HTL-135

INDIANA STEEL & WIRE CO., INC.
Muncie, Indiana

company towers at Cramer, Victorville, Crestline and San Bernardino, a system reaching about 75 miles.

At Boron, a communications building with nearly 1,000 square feet of floor space has been constructed. From this building, raw radar data, furnished by Burroughs Corp. electronic data processing devices, is transmitted through the microwave system to an electronic digital computer at a direction center.

California Interstate also installed equipment which furnishes air-to-ground and ground-to-air communications between the SAGE installations and supporting aircraft. Equipment providing for operations and voice maintenance and testing facilities is also located in the Boron building.

Another SAGE phase the company participated in was the construction of communications facilities between the Ground Air Transmitting and Receiving (GATR) site, located near the Boron Air Force Station, and the air control warning center on the station. This GATR site operates in connection with the air-to-ground communications portion of the over-all installation.

Citizens Utilities Gives Scholarship to Ariz. Youth

Abel Morales of Nogales, Ariz. is the 1961 recipient of the Citizens Utilities' Joseph C. Briggs Memorial Scholarship award in the amount of $500. The presentation was made by Del Mitchell, manager of Citizens' operations in the Nogales area. Abel's father is a lineman at Citizens' electric property.

The Briggs award is the eighth in an annual program established by Citizens Utilities Co. as partial financial assistance to high school graduates desiring to pursue higher education. The scholarship award presentation culminates a nationwide competition among children, grandchildren, brothers and sisters of employes of Citizens Utilities Co.

In addition to the scholarship award, the successful candidate is also eligible for on-job training with the company during summer vacations from college.

This scholarship was established as a memorial to the late Citizens Utilities administrative vice president, who met an untimely death in an automobile accident in 1951. This year, as in the past, the $500 award resulted from voluntary contributions of the employes and a contribution by the company. The award is made on the basis of scholarship record, recommendations of school authorities and community leaders, and a brief competitive examination.

In announcing the 1961 Briggs award, Richard L. Rosenthal, president of Citizens Utilities Co., stated: "This program has been designed to assist those children of our Citizens Utilities family, whose secondary school records demonstrate that they deserve, and can utilize, the benefits of higher education . . . The award is part of our effort to make a continuing contribution to the American tradition: Opportunity for ability, and reward for endeavor—regardless of origin or creed."

Abel Morales will be a science major at the Long Beach State College, Long Beach, Cal.

Citizens Utilities provides telephone, electric, natural and manufactured gas, and water service to more than 350 communities in Arizona, California, Colorado, Idaho, Illinois, Indiana, Maine, Pennsylvania, and Vermont.

MARKETING MAKES MONEY

Concluded from page 26

I would recommend this change to Independent companies:

(1) Good, modern, complete telephone service is not possible in today's market without effective product exposure, adequate product display, product demonstration, product interpretation and sales motivation. We are not fulfilling our responsibility to our customers unless we take the initiative to help them understand the value that our many products and services have for them.

(2) Effective marketing is an excellent avenue through which we realize additional revenue and profits and thereby contribute to our capability to hold down the cost of our basic service.

(3) To meet our obligations to our employes and our owners we should take advantage of marketing to increase our average revenue per telephone, to effect efficiencies and economies in our operations, and to serve as a direct contribution to our earnings potential.

(4) We face a serious threat to our present and future potential from inroads through outside competition. Marketing can be an effective tool with which to combat such competition. Through marketing we can realize improved customer relations, and can place our company in a position not only to keep pace with the industry, but to insure a position of leadership in the years to come.

There is a very real possibility, in my opinion, that the continued existence of our Independent telephone companies may depend upon our ability to realize this need and to take adequate steps to meet it. There are too many case histories of other large industries which have disappeared from our economy as a direct result of failing to recognize and adequately cope with this marketing requirement.

(The End)

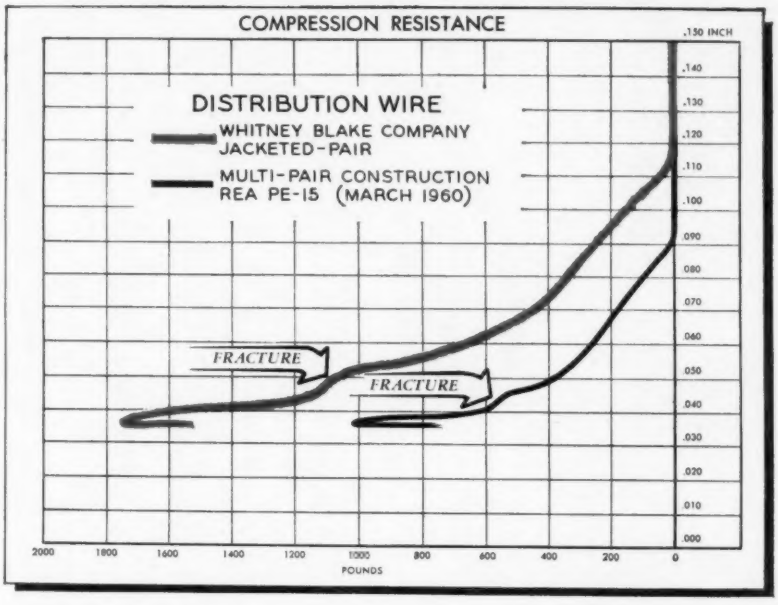
WHITNEY BLAKE

JACKETED PAIR

DISTRIBUTION WIRE

DOUBLE THE COMPRESSION RESISTANCE

of PE-15 Type



In order to demonstrate the extreme mechanical toughness of the JACKETED-PAIR wire, and to obtain a measure of the mechanical handling capabilities, samples of JACKETED-PAIR and the PE-15 construction were subjected to a compression-resistance test. The PE-15 type withstood an average of 525 pounds before the insulation was crushed to the failure point while the JACKETED-PAIR required an average crushing pressure of 1080 pounds. Thus, the JACKETED-PAIR has more than twice the compression resistance of the PE-15 type multi-pair distribution wire.

WB WHITNEY BLAKE CO.

For more complete information ask for FREE copy of Bulletin T-6

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ITT Kellogg Changes COE Dept. to Telecommunications

George A. Strichman, president of ITT Kellogg, has announced a change in the name of the Central Office Equipment Department, and expansion of its production facilities, including a new plant.

The new name, Telecommunications Department, is in keeping with recent consolidation of manufacturing and marketing of industrial and commercial telecommunications equipment, in addition to being a major supplier of equipment to the Independent telephone industry, according to Richard H. Griebel, vice president and general manager of the new department.

The new plant, now under construction, will be located in Milan, Tenn., and will manufacture step-by-step switching equipment.

The modern factory will be completely air-conditioned and initially, will contain 50,000 square feet. It will be situated on 50 acres in Milan's industrial park inside the city limits, and adjacent to the Illinois Central Railway.

The company states that production is anticipated by Jan. 1, 1962, and will start with approximately 100 employes, including technical and management personnel transferred from headquarters. Both the plant and production facilities have been planned with future expansion in mind.

Clisbee Graybar Acting Gulf Coast Head; Young to Retire

Graybar Electric Co.'s president, W. E. Henges, has announced the appointment, effective Sept. 1, of D. E. Clisbee as acting manager of the company's Gulf Coast district at Houston, Tex.

Mr. Clisbee, whose permanent appointment as Gulf Coast district manager will become effective Jan. 1, 1962, will replace the present district manager, V. R. Young, who will retire at that time.

Most recently Gulf Coast district sales manager, Mr. Clisbee began his Graybar career as an elevator operator in Chicago, and later served in various positions in the warehouse there. In 1939, he was transferred to the company's Hammond, Ind., branch where his duties were divided between the office and the warehouse.

In 1941, he was appointed service and disbursing clerk at Hammond, and in 1947, became a salesman there. He was promoted to Hammond manager in 1953.

In 1958, Mr. Clisbee joined Graybar's New York national headquarters as general commercial sales manager. He held that position for one year before he was appointed Gulf Coast district sales manager.

99%
RATE
KWAL-KRETE
EXCELLENT

In a recent survey, polling all KWAL-KRETE masonry paint users, 99% rated its performance "Excellent." KWAL-KRETE is scientifically developed to seal, protect and beautify concrete. KWAL-KRETE is waterproof and proven so by independent laboratory tests. The paint's ability to perform in the field is mirrored in the fact that leading telephone and utility companies specify KWAL-KRETE exclusively.

KWAL PAINT

For FULL INFORMATION and SPECIFICATIONS on KWAL-KRETE, together with a color card, write your name and title on your letterhead and mail to KWAL PAINTS, INC., 800 Water St., Denver, Colorado.

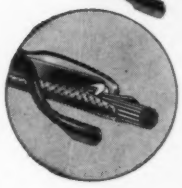
Donald C. Power, left, chairman and chief executive officer of General Telephone & Electronics Corp., presents Clare E. Williams, president of General Telephone Co. of O. with a pin marking Mr. Williams' 35 years of service with the General System. Mr. Williams was the guest of honor at a surprise celebration.

Slit and Cut Cable Sheath Fast and Easy!

Neuses Cable Tools

CABLE SHEATH SLITTER

No. N-62267



Just the tool needed for slitting most of the outdoor, heavy-duty types of cable coverings — large or small diameters.
Cuts into cable jacket at any point without previous notching. Size 6"x 1½". Price with 2 blades $4.20.

RING CUTTING CABLE TOOL

No. N-2060

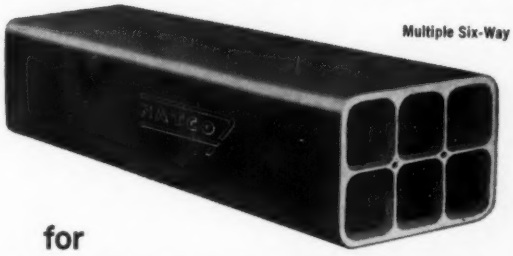
A real handy tool for "ring" cutting the sheathing of INSIDE TYPE plastic, fabric, or rubber covered cable 3/16" to ½", or thin sheathed cable up to 1" diameter. Cut through cable sheathing *limited* to 1/32". Price $7.40.

Write for catalog.

P. K. NEUSES, INC.
Small Tools for the Communication Industry.

511-19 N. DWYER ST. ARLINGTON HEIGHTS, ILL.

NATCO CLAY CONDUIT

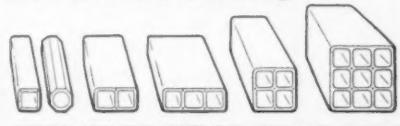


for

PERMANENT PROTECTION OF UNDERGROUND CABLE

Natco Clay Conduit is furnished in both single and multiple duct for the permanent protection of underground telephone, telegraph, signal, power and lighting cables against fire, corrosion, electrolysis, mechanical injury and chemical attack. Write for catalog.

ALSO AVAILABLE IN . . .



natco corporation
327 Fifth Avenue, Pittsburgh 22, Pennsylvania

NEW COILED CORDS

PLUS
MOLDED-ON COMPONENTS

You save handling time, trouble, expense — and improve the utility and appearance of your product — with *complete coiled cords.*

You may want coiled cords alone — or with a wide variety of strain reliefs, special plugs, connectors and other stock or custom-engineered components molded-on.

Either way, you'll have one source of supply, one source of responsibility — *Miller Electric.*

NEW EXCLUSIVE DESIGN
Conductors lie **parallel** within the helix for less relative motion as cord extends and retracts. This feature can be specified where appropriate; it yields significantly lower noise levels and longer life for communications cords.

NEW VINYL JACKETING COMPOUNDS include a full range of colors, are exceptionally resistant to abrasion and chemicals, and will not chip, peel, fade or mar other surfaces. Non-migratory and low-temperature formulation of these insulating compounds are also available.

LIVELY ACTION IS PERMANENT — lasts as long as the cord itself. A typical cord with tinsel conductors will e-x-t-e-n-d to four times its retracted length — **and retract fully** — at a rate of 60 extensions per minute, for 300,000 cycles.

WITH HUNDREDS OF STOCK COMPONENTS to select from, and cost-conscious engineers who find imaginative solutions to special problems, you'll want to know more about Miller Electric Co.

WRITE FOR FREE BULLETIN

MILLER ELECTRIC CO.

120 Main Street • Pawtucket, R. I.

Whittemore Eastern Manager For Raytheon Products

Donald B. Whittemore has been promoted to Eastern Zone manager for Raytheon Co.'s Distributor Products Division. He will be responsible for the marketing of Raytheon electronic components and equipment sold through distributors.

Mr. Whittemore succeeds Ralph B. Knapp Jr., who has been named manager of operations for the division.

Mr. Whittemore will continue to serve as commercial manager of Raytheon's mid-Atlantic region, a post he has held for the last year and a half. He will maintain his headquarters at 210 Sylvan Avenue, Englewood Cliffs, N. J.

He joined Raytheon in 1942 as district manager in the Radar Division. From 1945 to 1948, he was manager of commercial radar sales in the New York area, and for the following 10 years, was New York district sales manager for Raytheon's Commercial Equipment Division.

Before his appointment to the regional managership last year, he was East Coast sales manager for the company's heavy marine equipment.

Prior to joining Raytheon, Mr. Whittemore was a field engineer for the National Broadcasting Co., New York City, and earlier, was an engineer with R.C.A. Laboratories.

D. B. WHITTEMORE

Disharoon to Hubill, C&D Ia. Sales Organization

Edwin A. Disharoon has joined the C & D Batteries sales organization in Davenport, Ia., the Conshohocken, Pa. firm has announced. Mr. Disharoon is associated with Hubill, Inc., C & D's Iowa representatives.

Prior to joining Hubill, Inc. Mr. Disharoon served as a project design engineer with Deere & Co. in Moline, Ill.

He received his bachelor of science degree in mechanical engineering at the South Dakota School of Mines and Technology, and is a member of the American Society of Mechanical Engineers and of the American Society of Materials Handling Engineers.

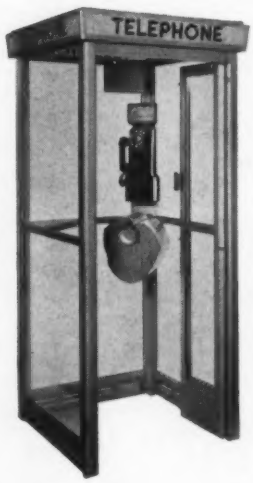
James Beattie Jr. Elected Willys Vice President

The election of James Beattie Jr. as vice president and general sales manager of Willys Motors, Inc., is announced by S. A. Girard, president.

Mr. Beattie has been Willys general sales manager since January, 1960, and also has been a vice president of Willys Sales Corp., a domestic sales subsidiary.

With Willys since 1949, he has served in regional and divisional executive sales positions in Minneapolis, Chicago and New York, and was Western division manager in San Francisco before moving to Toledo as assistant general sales manager in 1958.

PROVED BEST for attractive appearance



Intelligent engineering always includes appearance. Slim posts, good proportions and a variety of glass and solid panel arrangements make this the most attractive booth available.

the BN Booth

For full particulars, consult your distributor or write direct ... Benner-Nawman, Inc., 3421 Hollis Street, Oakland 8, California.

a B-N booth is a busy booth!

Telephone Ordering Service Sells Phonograph Records

Telephone answering instruments have been put to a new use by the Higbee Co. of Cleveland, O. This department store now provides its customers with "albumatic," a 24-hour seven-day-a-week ordering service for phonograph records.

The system is being tested, and if it is satisfactory, it may be adapted to other department store merchandise.

A spokesman for Higbee said that the system has been proving successful. On the second day of its operation, it chalked up 510 over-load calls.

All a customer has to do is dial the specified number. The call rings at the department store . . . a recorded voice says, "thank you for dialing albumatic. I'll be glad to take your order for . . ." and the name of an album and the label name is given, after which a portion of one song is played.

The recorded voice then gives the price of the album for monaural or stereo and also advises the customer that he may order any other album he so desires.

The recorded voice asks that after the "beep," or tone signal that the customer give his name and address, which album he desires, whether he wants monaural or stereo and whether the album is to be sent C.O.D. or charged to the customer's Higbee account.

The record selection is changed each day with the exception of the weekend, with the same record being played on Saturday and Sunday.

The service covers the metropolitan Cleveland area and is promoted by the store in newspaper and radio advertising.

ITT Kellogg Appoints Berndt & Klein Distributor

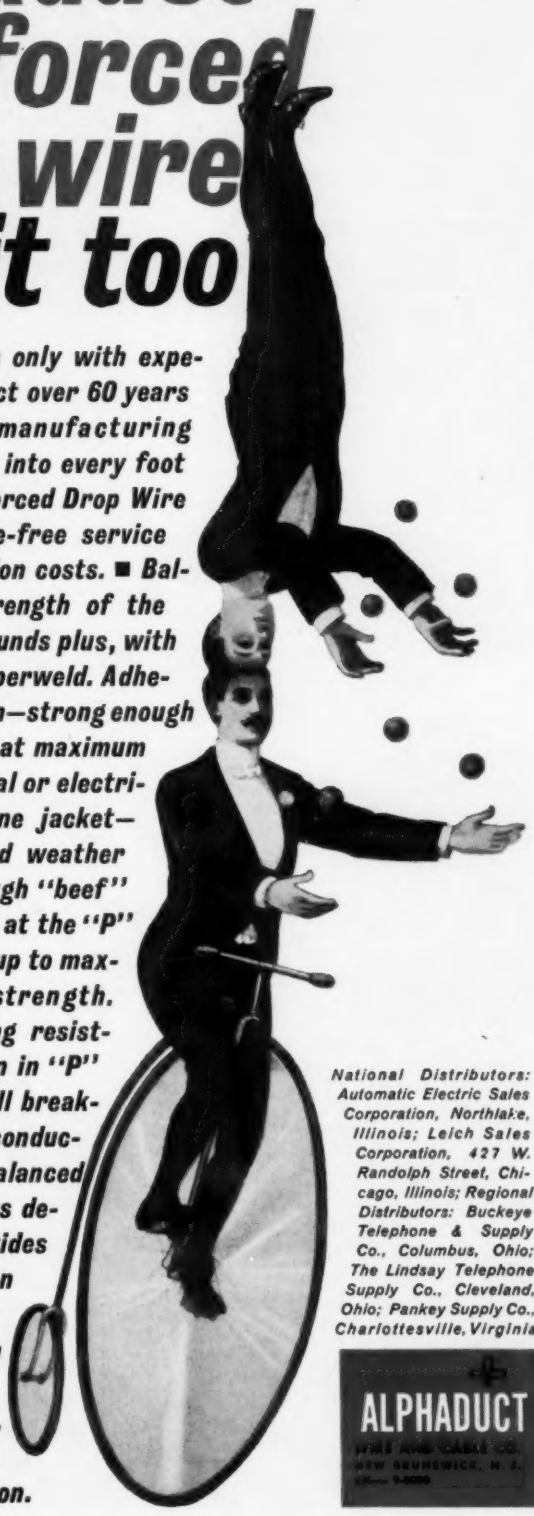
Berndt & Klein Associates is the new distributor of industrial products for ITT Kellogg in the Chicago and Cook County, Ill. area, William P. Hollis, ITT Kellogg vice president and manager of marketing, has announced.

Berndt & Klein Associates, located at 6322 Milwaukee Ave., Chicago, has served the area for seven years.

Products distributed for ITT Kellogg include crossbar switches, Duo-Quintet, Electro-Lok, the impulse counter, the magnetic data storage drum, handsets, and Matrix and various types of relays, including AK, BK, L, M, and 4000.

The addition of Berndt & Klein Associates as an ITT Kellogg industrial distributor will provide increased service, and facilitate delivery to customers, Carl N. Pehlke, ITT Kellogg industrial products manager, stated.

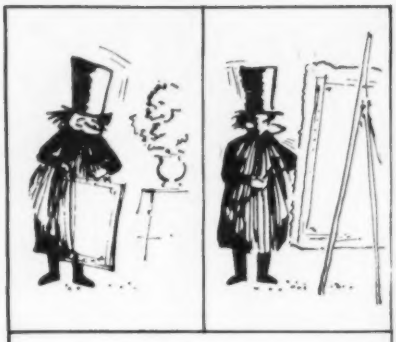
true balance... alphaduct reinforced drop wire has it too

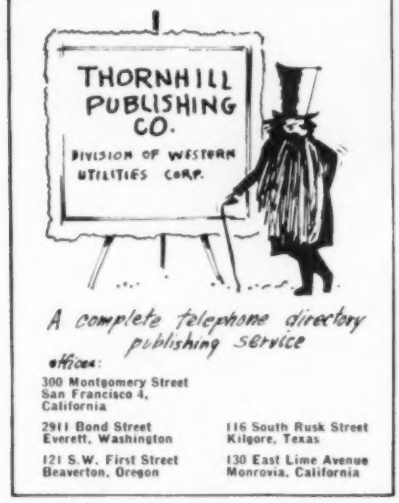


True balance comes only with experience...at Alphaduct over 60 years of technical and manufacturing know-how are built into every foot of Alphaduct Reinforced Drop Wire for greater trouble-free service and lower installation costs. ■ Balanced breaking strength of the conductors—400 pounds plus, with #18 AWG, 30% copperweld. Adhesion of the insulation—strong enough to prevent slipping at maximum load without physical or electrical failure. Neoprene jacket—tough, abrasion and weather resistant with enough "beef" to prevent buckling at the "P" clamps all the way up to maximum conductor strength. Compression cutting resistance—no breakdown in "P" clamps up to overall breaking strength of the conductors. This sturdy balanced construction resists deformation and provides greater protection against lightning failures. ■ Insist on Alphaduct Reinforced Drop Wire... and remember, it's dated for comparison.

National Distributors: Automatic Electric Sales Corporation, Northlake, Illinois; Leich Sales Corporation, 427 W. Randolph Street, Chicago, Illinois; Regional Distributors: Buckeye Telephone & Supply Co., Columbus, Ohio; The Lindsay Telephone Supply Co., Cleveland, Ohio; Pankey Supply Co., Charlottesville, Virginia

ALPHADUCT
WIRE AND CABLE CO.
NEW BRUNSWICK, N. J.





A complete telephone directory publishing service

offices:

300 Montgomery Street
San Francisco 4,
California

2911 Bond Street
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116 South Rusk Street
Kilgore, Texas

121 S.W. First Street
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Here's Safer, Easier, Reel Handling

NEW
SIMPLEX REEL JACK
with
Lightweight
Aluminum
Housing

●Here's the reel jack that is strong and stable without hard-to-handle extra weight. An aluminum alloy housing reduces overall weight by 21 pounds, yet maintains full 10-ton capacity. "I" shaped laminated oak base gives solid, safe foundation. Single acting mechanism provides easier operation. Handles reels to 84" dia.; weighs 83 lbs. Furnished with 5' lever bar.

Write for full data on Reel Jack No. A-1029 and other Simplex Utility Jacks.

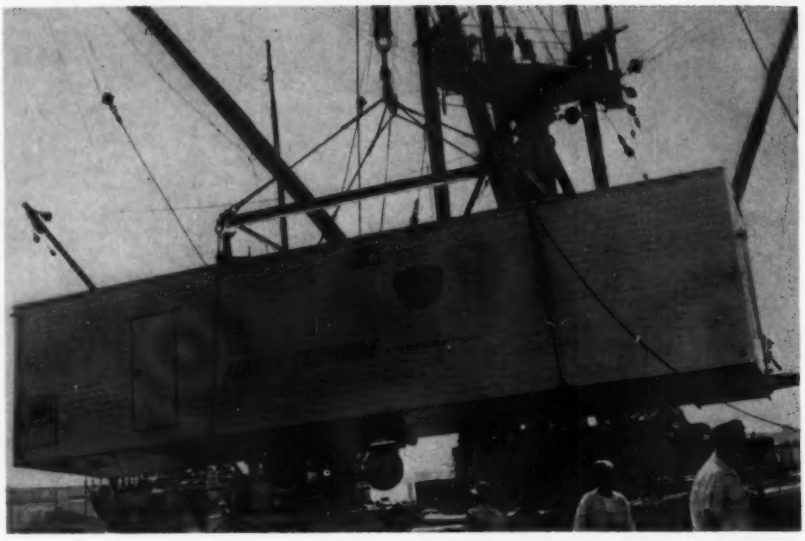
Pole Pulling and Straightening Jacks—Save time, cut work crews necessary to pull, straighten or move poles. No. A-1538 has aluminum housing, 15-tons capacity, weighs 63 lbs.

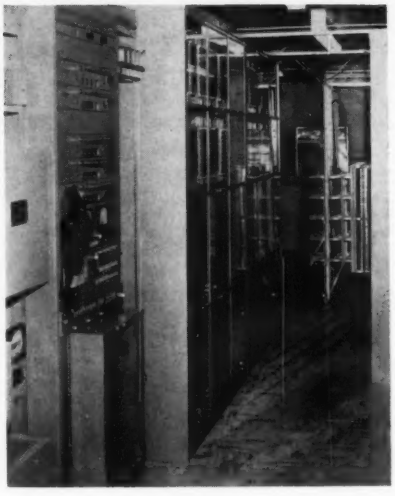
All-Purpose Jack — No. 310A lifts, pulls, pushes at any angle. Four lift points, 15-tons capacity.

WORLD'S LARGEST MAKERS OF INDUSTRIAL MECHANICAL AND HYDRAULIC JACKS

SIMPLEX JACKS

TEMPLETON, KENLY & COMPANY
2557 Gardner Road, Broadview, Illinois





ABOVE: "Communications van," designed to permanently house Alaska Tel. Corp.'s Leich dial system in Haines, Alaska, is shown as it was loaded aboard ship for 1,000-mile sea trip from Seattle, Wash. This is the largest package mobile dial telephone exchange ever to be shipped by sea in North American Pacific waters. (For full story on this exchange see June 3 issue of TELEPHONY.) LEFT: Interior view of van showing Leich all-relay terminal-per-line common control dial switchboard, equipped initially for 240 lines.

New Lenkurt Sales Engineers Assigned to NW, SW

Two new sales engineers have been added to Lenkurt Electric Co., Inc., field sales and service offices, one at Minneapolis, Minn., and one at Dallas, Tex., to specialize in the Mobiltel line of mobile telephone systems.

The men are Henry A. Sorenson, at Minneapolis, and Donald J. Robb, at Dallas. The Minneapolis office, 7600 Highway 7, is responsible for North and South Dakota, Nebraska, Minnesota, Iowa, and Wisconsin. The Dallas office, 1425 Southland Center, has as its territory, Missouri, Kansas, Oklahoma, Arkansas, and Texas.

Before joining Lenkurt, Mr. Sorenson was a maintenance engineer for Osceola Farmers Mutual Telephone Co. in Minnesota. Prior to that, he had been with Remington Rand Co., UNIVAC Division, as a computer technician. Mr. Robb was a cable transmission engineer with the New York Telephone Co., having worked his way up from an installer in the plant construction department during 16 years with the company.

Oatis Marketing Manager Wheatland Electric Products

Vincent P. Oatis Jr., former sales engineer and head of his own sales agency, has been named marketing manager of Wheatland Electric Products Co., Carnegie, Pa., Robert C. Bennett Jr., president, has announced.

Mr. Oatis, who attended the University of Michigan, began his business career as a district salesman and later, worked as sales engineer for the I. A. Bennett Co. in Chicago, Ill.

He went to Pittsburgh, Pa., in 1950 as assistant product manager of underfloorduct and busway systems for National Electric Products Co. He was appointed product sales manager of National Electric in 1957.

In 1958, Mr. Oatis joined Bennett

Electric Power and Communications Construction
E. & C. CONTRACTING CO.
Box 191
Paoli, Indiana
Phone 7821

CABLE CONSTRUCTION CO.
1512 Center St. Tacoma, Washington
ENGINEERING - CONSTRUCTION
SPLICING - CABLE PLOWING
CENTRAL OFFICE INSTALLATION
World-Wide

CREO & PENTA TREATED POLES
"from the Nation's Largest Plant"
DIERKS FORESTS, INC.
NA 3-7766 Hot Springs, Ark.

POLES

B. J. Carney & Co., 100 N. 7th St., Minneapolis, Minn.—Western red cedar poles. Pentrex Butt Treated or Plain.

Cascade Pole Co., P.O. Box 743, Tacoma, Wash. — Creosoted Douglas Fir and Cedar Poles.

C. M. Christiansen Co. — Northern White Cedar Poles, Pentachlorophenol treated. Plant and Yards, Phelps, Wis.

Eppinger & Russell Co., 80—8th Avenue, New York 11, N. Y.—Creosoted Poles and Cross Arms. Plants: Jacksonville, Fla., Norfolk, Va., Eddington, Pa.

International Creosoting and Construction Co., Galveston, Texas—Creosoted Southern Yellow Pine Poles. Plants Beaumont and Texarkana, Texas.

International Paper Co., Wood Preserving Division — 926 Grand Avenue, Kansas City, Missouri—"LONG-BELL" pressure-treated Southern Pine and Douglas Fir Poles—Creosote or Penta.

Piedmont Wood Preserving Company —Creosoted and Creosote-Penta Treated Pine Poles. Plant, Augusta, Georgia. Yards, Virginia, West Virginia and Connecticut. Address inquiries to Box 1662, Spartanburg, S. C.

Texas Creosoting Company—512 Main Street, Orange, Texas—Creosoted Southern Yellow Pine and Douglas Fir Poles. Can also treat with "Penta."

Associates as vice president of sales.

He became sales manager of the National Electric Products Division of H. K. Porter Co. in 1959.

Subsequently, he formed his own agency as a manufacturers' representative, serving western Pennsylvania and West Virginia areas. He remained in that capacity until his recent appointment with Wheatland Electric Products Co.

Onan Names Cal-West Electric As N. Cal. Distributor

Cal-West Electric Inc. has been appointed a new distributor for Onan Products for the Northern California trading area. The appointment was announced by Roy E. Mullin, vice-president-marketing, Onan division of Studebaker-Packard Corp.

Cal-West is located at 461 Van Ness Ave., San Francisco 3, Cal.

The Cal-West company will handle Onan's line of gasoline and Diesel engine driven electric generating plants.

Cal-West replaces the San Francisco branch of Ets-Hokin & Galvan as Onan distributor in northern California. Other Ets-Hokin & Galvan branches in Wilmington and San Diego are not affected and will continue handling all Onan Products.

Officers of the Cal-West company include: John O'Brien, president; Jack DeBella, executive vice president and sales manager; Lloyd McFarland, superintendent and secretary treasurer.

Inner Mastery

"Those that command themselves command others."—HAZLITT.

INSPECTION SERVICE
"AT TIMBER TREATING PLANTS"
Of poles, crossarms, and preservative treatments. Analysis of wood preservatives. Consultation and specification writing.
A. W. WILLIAMS INSPECTION CO., INC.
MOBILE, ALABAMA
New York • St. Louis • Portland
Inspectors stationed throughout the U.S.A.

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TELEPHONE Construction and Maintenance SUPPLIES. C.O.E. Engineering and INSTALLATION CREWS. Factory Trained SPECIALIST.
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Underground Duct Sytems
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Rates 15 cents per word payable in advance. Minimum charge $3.00 for 20 words or less.
Classified advertisements must reach us 8 days before publication date.

POSITION WANTED

EXPERIENCED TELEPHONE & ELECTRIC STAKING CREWS with REA background interested in work anywhere within the States. Write: Box No. 4569 c/o TELEPHONY.

12 YEARS EXPERIENCE in telephone work including dial C O E installation. Prefer Northwest or Central West. Am familiar with Leich equipment. Write Box No. 4570 c/o TELEPHONY.

THIRTY-SIX YEAR OLD ex-Bell man, Central Office and Installer with outstanding sales record, desires telephone work. Will relocate. Write to Ralph J. Seaburn, Jr., 548 Logan Ave., Sharon, Pa.

HELP WANTED

HELP WANTED: Middle aged man for rebuilding and testing telephones, pay stations and related equipment. Steady employment, good working conditions, some experience required. Write to Telephone Repair & Supply Co., 1760 W. Lunt Ave., Chicago, Ill.

CENTRAL OFFICE SWITCHMAN, experienced on A.E. step-by-step, North CX and Stromberg—XY desired. Reply to Box No. 4566 c/o TELEPHONY.

ENGINEERS—TELECOMMUNICATIONS SYSTEMS
Transmission; Propagation; Field Surveys, Applications Research, VHF, UHF, MICROWAVE, SCATTER. Write: Employment Manager, Microwave Services, Inc., General Offices, U.S. Rt. 46 & Cisco Rd., Denville, N.J.

HELP WANTED

SWITCHMAN: Class A Independent Company located in New York State. Submit résumé to Box No. 4562 c/o TELEPHONY. All replies confidential. Salary and benefits excellent.

WANTED: Two Central office men. A Progressive Ohio telephone company seeks two experienced central office men who are familiar with Automatic Electric step-by-step equipment. Give full details. Write to A. F. Harman, 714 Caxton Building, 812 Huron Rd., Cleveland 15, Ohio.

WE HAVE A POSITION OPEN for a Central Office Equipment man, who is experienced in the maintenance of Federal Step and Leich terminal per line and terminal per station equipment. This position will pay up to $5,000.00 per year. Call or write, if qualified, Frank Solberg, General Manager, United Telephone Mutual Aid Corporation, Langdon, N. Dak. Phone number CLearbrook 6-2240.

ENGINEERS—Chief Engineer, college degree or equivalent, PE preferred, 5-10 years experience; Plant Engineers, 2 years college or equivalent, 2-5 years experience; C. O. Engineers, 2 years college or equivalent, knowledge of carrier, micro-wave, step-by-step, crossbar, 5 years experience; Traffic Engineers, 2 years college, accounting desirable, knowledge of traffic and toll separation, 5 years experience. Salaries commensurate with qualifications, augmented by hospitalization, group life, vacations. Send résumé, salary requirements to Box 4561, TELEPHONY.

WANTED TO BUY

TELEPHONES—all types—any condition, candlesticks, wall sets, etc. Write advising quantities available. Our trucks will pick up. Reply to Box No. 3952, c/o TELEPHONY.

WANTED ALL MAKES OLD TELEPHONES—our truck will pick up and pay you Cash on the spot. Telephone Co., Turtle Lake, Wis.

FOR SALE

FOR SALE: Used telephones, 189 Stromberg-Carlson 1243's; 78 Stromberg-Carlson 1250's; 58 North 9800's; and 31 North 9000's. These are priced to sell. Quantity lot prices $3.75 per set. Write to Polar Rural Telephone Co., Park River, N. Dak.

ORCHIDS—Mature Cattleya and Cypripedium grow and bloom on your kitchen window. Five inch pots . . . $5.00. Bill Gray's Gardens, 125 S. Eighth St., Quincy, Ill. BA 2-3800.

JUST REMOVED ACCOUNT DIAL CONVERSION — Western Electric magneto handsets Type 202 — $3.00; Magneto generator boxes—$1.00, Leich 901 handsets—$10.00. Write to Box 296, Rison, Ark.

RDW BRACKETS — REFINISHED
J-8236 Pole Brackets..... .60 ea.
J-8235 Arm Brackets.....1.00 ea.
Prepaid in lots of 50 or more.
6 INCH THIMBLE EYE SCREW ANCHORS
¾ in. x 5½ ft.....3.00 ea.
Prepaid in lots of 24 or more.
Telephone Equipment, Inc.
Montrose, Mich.

5 REELS—4,000 ft. each—16 pr. 24-ga. Rural Distribution Wire
13 coils—1,000 ft. each—2-conductor, 16-gage Neoprene Jacketed Outside Distributing Wire
4 coils—1,000 ft. each—2-conductor, 22-gage IVORY Parallel Inside-Outside Wire, plastic jacketed
3 coils—1,000 ft. each—2-conductor, 22-gage BROWN Parallel Inside-Outside Wire, plastic jacketed
85 Anchor Rods, Never-Creep, ¾" x 6'
105 Never-Creep Anchor Plates #622 (6" x 22")
70 #8120 Kearney 8-inch 2-way malleable iron expanding anchors
PRICE: $2,000.00 for the lot. FOB Charlottesville, Va. Pankey Supply Co., Box 1070, Charlottesville, Va. Telephone #3-2115.

IN A HURRY? CALL "BUCKEYE"

LAMP SOCKETS

QUANTITY	TYPE	CONDITION
1500	S.C. Indiv. Type #13 (#601869)	New
1000	S.C. (10 per strip) #121 on 80	New and Recond.
100	S.C. (20 per strip) #121 on 81	Recond.
400	S.C. (20 per strip) #121 on 83	New
200	S.C. (10 per strip) #121 on 89	New
1000	Kellogg #34 (10 per)	New
100	Kellogg #41 (20 per)	New
500	Kellogg #25 (20 per)	New and Recond.
200	A.E. #D-42431-F (20 per)	New and Recond.
70	A.E. #D-42431-C (10 per) W/busy desig.	New
70	A.E. #D-42431-G (20 per) W/busy desig.	New
2000	W.E. #12B on 137-B (20 per)	New
100	W.E. #43-A on 278-B (20 per)	Recond.
100	W.E. #12 on 125 (10 per)	New
300	W.E. #12 on 134 (10 per)	Recond.

LAMPS

2000	Sylvania 24 B2 Lamps, 24 Volt	New
20,000	Kellogg & Sylvania 1224 TD 12 Volt .065—.076 Amp. 24 Volt .080—.090 Amp.	New (Reboxed)

(*) Many associated Spring Jacks Strips 10 and 20 per, are available for above Lamp Sockets.

BUCKEYE TELEPHONE & SUPPLY CO.
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The following NEW DROP WIRE in odd-size coils of 300-ft. to 950 ft. unless otherwise indicated:

#18-2 Neop. Jacketed Dumbell Parallel Copperweld—
118,545 ft.—$20.50 M ft.

#18-2 Neop. Jacketed Regular Parallel Copperweld—
104-875 ft.—$21.75 M ft.

#17/2 Neop. Jacketed Twisted Pair Copperweld—
82,780 ft.*—$25.05 M ft.
*76,000 ft. boxed in 1,000-ft. coils

All wire guaranteed. All coils factory wrapped in waterproof paper with ripcord. Above quantities offered subject to prior sales. FOB Charlottesville, Va. Pankey Supply Co., Box 1070, Charlottesville, Va. Telephone #3-2115.

JEWELRY Suitable to create incentive for merchandising programs, promotional use banquets, conventions, etc. Available, new phone, yellow pages, 100,000 mile and Independent association insignia. R. H. Bucher, P. O. Box 41, Lansdale, Pa.

BRAND NEW COOK XB POLE TERMINALS, 16 pair — unprotected, w/stubs—$6.00 Ea. A.E. #80—DESK SETS, dial, St. line, coiled cords. $16.00 Ea. Limited supply—F.O.B. Chicago. INDEPENDENT TELEPHONE REPAIR CO. 2137 West 21st St., Chicago 8, Ill.

---

200 LINE KELLOGG RELAYMATIC DIAL SWITCHBOARD 130 lines equipped, 10 links, 6 trunks, TPL, code ringing, four digit. Installed new 1949, never moved from original installation. Everything but main frame. Ready to hook up. Will ring up to 20 parties divided, 16 parties bridged. $3,250. Call collect Harry H. Baker, Jr., Mariposa County Telephone Co., Inc., Raymond, Calif. MUtual 9-3323, P. O. Drawer X, Raymond, Calif.

USED, SERVICE REPRESENTATIVE TUB FILES AND DESKS. One tub file and two desks per unit, 45 units available; good condition, reasonably priced.

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Dials • Cable Tone
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Workmanship Guaranteed • Speedy Service

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STERLING
EARTH BORING MACHINES
WYOMING VALLEY EQUIP. DIV.
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MANUAL SWITCHBOARD POSITIONS
NEW—GOOD USED—REBUILT

Telephone Answering Service
Converted W.E. #551B (using #284C jacks—line & trunk)
60 line wired & equipped
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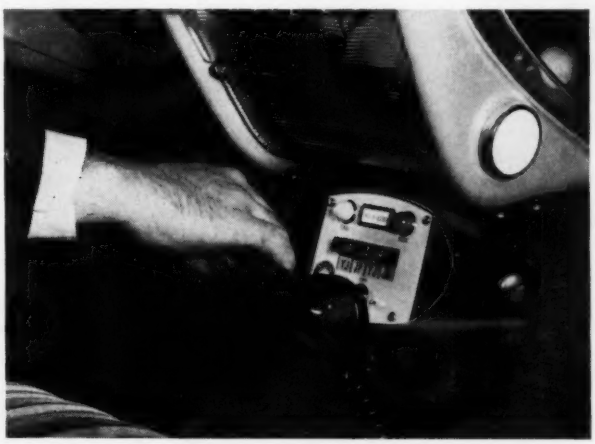

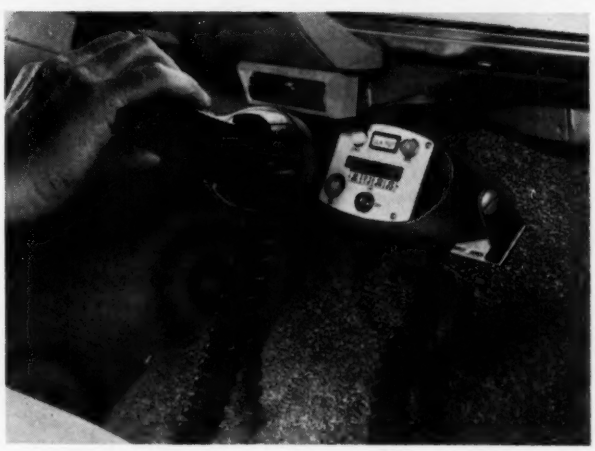

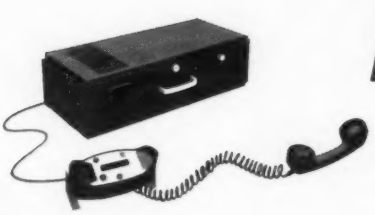

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